MOTOR AGE



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A CHILTON PUBLICATION



In leading magazines and farm journals, the owners of the nation's cars, trucks and tractors will see this ever-popular picture dramatically illustrating the keynote of Hastings' big 194 advertising campaign: "Piston Rings wear out, too."

Piston Rings wear out, too

Today, more than ever before, car owners are being urged to think about their piston rings. They're being educated to realize that worn-out rings cause rapid, needless engine wear . . . that prompt installation of new rings renews engine performance and prolongs engine life.

And the piston rings that car owners hear about most often are Hastings Steel-Vents. In the magazines, over the air, everywhere, they hear that Hastings Piston Rings are "the best money you can spend on your car."

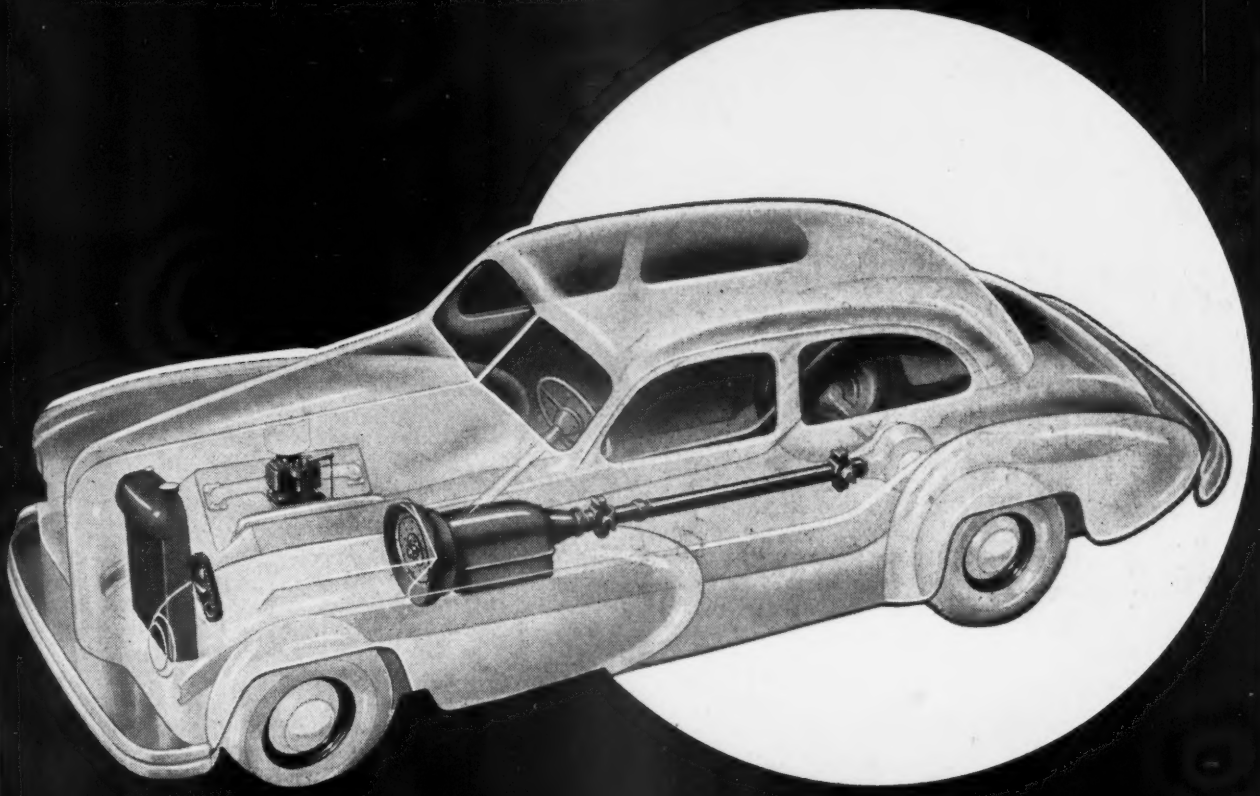
Here is advertising that sells car owners the need for promptly replacing worn-out rings on a logical, believable basis. And here is advertising which you can tie in with to sell not just piston rings but overall motor maintenance.

HASTINGS MANUFACTURING COMPANY • HASTINGS, MICHIGAN
Hastings Ltd., Toronto
U. S. PAT. 2,148,997
Listen to "I DEAL IN CRIME" • Saturday Night 8:30 EST • ABC



HASTINGS
STEEL-VENT PISTON RI
TOUGH *on Oil-pumping*
GENTLE *on Cylinder Walls*

19 of the 20 makes of motor cars embody essential parts made by BORG-WARNER!



ENGINEERING
B-W
PRODUCTION

TRANSMISSIONS	UNIVERSAL JOINTS
TIMING CHAINS	DRIVE SHAFTS
OVERDRIVES	CARBURETORS
SYNCHRONIZERS	RADIATORS
CLUTCHES	TAPERED WHEEL DISCS

Executive Offices, Chicago. These units form Borg-Warner: BORG & BECK • BORG-WARNER INTERNATIONAL BORG WARNER SERVICE PARTS • CALUMET STEEL • DETROIT GEAR • DETROIT VAPOR STOVE INGERSOLL STEEL LONG MANUFACTURING • LONG MANUFACTURING CO., LTD. • MARBON • MARVEL-SCHEBLER CARBURETER • MECHANICS UNIVERSAL JOINT • MORSE CHAIN • MORSE CHAIN CO., LTD. • NORGE • NORGE-HEAT • NORGE MACHINE PRODUCTS PESCO PRODUCTS • ROCKFORD CLUTCH • SPRING DIVISION • SUPERIOR SHEET STEEL DIVISION WARNER AUTOMOTIVE PARTS • WARNER GEAR • WARNER GEAR CO., LTD • WISCONSIN TRANSMISSION

TEXACO DEALERS

Present

TONY MARTIN



IN A GREAT NEW SHOW!

-on the TEXACO STAR THEATRE

Featuring...

VICTOR YOUNG'S
ORCHESTRA

EVELYN KNIGHT
SINGING STAR

JIMMY WALLINGTON
ANNOUNCER

And... outstanding *GUEST STARS* like these...

BOB HOPE!

BURNS & ALLEN!

EDDIE CANTOR!

RED SKELTON!

TEXACO
REG T.M.

CBS

EVERY SUNDAY NIGHT! CBS NETWORK! 150 STATIONS! COAST-TO-COAST!

THE TEXAS COMPANY

JUST WHAT THE DOCTOR ORDERED.....



... for All Assemblies!

FORM-A-GASKET No. 1 (a paste) sets fast . . . but not too fast for use on large surfaces. It dries hard, but does not become brittle. It's a swell product for making pressure-tight, leak-proof unions . . . even if surfaces are warped.

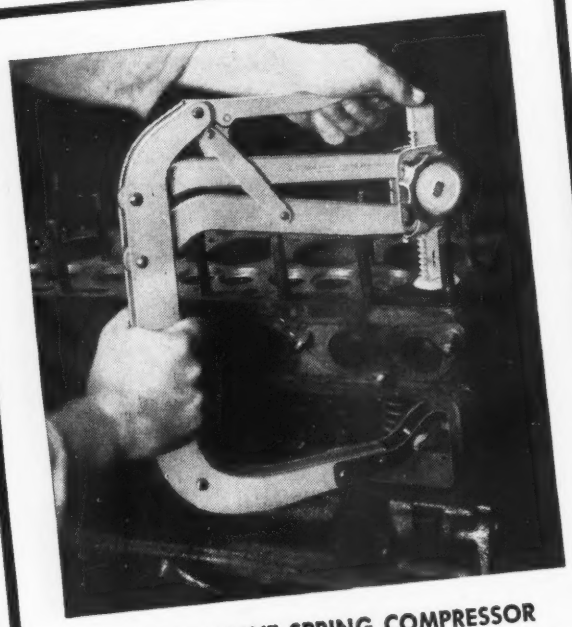
FORM-A-GASKET No. 2 (a paste) sets slower than No. 1. It dries to a tough, pliable layer with plenty of "cushion". It resists high pressures, continual vibrations and disassembles very easily.

AVIATION FORM-A-GASKET No. 3 (a brushable, self-leveling liquid) sets into position and dries to a tacky paste. It will not run, even when heated to 400° F. nor become hard or brittle at temperatures down to 70° F. below!

ALL TYPES OF FORM-A-GASKET PRESERVE ALL TYPES OF GASKETS!

PERMATEX COMPANY, INC., BROOKLYN 29, N. Y.

K-D TOOLS



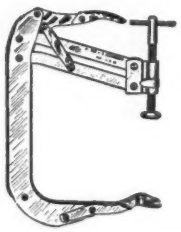
K-D 380 VALVE SPRING COMPRESSOR
The most popular and universal compressor on the market. Services nearly all L-head and valve-in-head motors, old and new. Exclusive automatic depth adjustment and quick-operating handle make it fast and easy to operate. Sturdy steel frame. Two sets adjustable jaws. No. 38 Extra high offset jaws extra.

At Jobbers' everywhere



K-D 337 CADILLAC COMPRESSOR SET
A new K-D Tool. Services all Cadillac and LaSalle V-8 motors starting with 1935. One mechanic can remove and replace all valves without walking from side to side. Unique brake provides positive locking at height desired. Comprised of No. 335 Valve Spring Compressor (shown above on a Cadillac motor) and No. 336 Valve Keeper Inserter.

. . . make hard jobs easy . . .



K-D 385 VALVE SPRING COMPRESSOR
For small L- or valve-in-head motors, manifolds removed. Services Chevrolet "Master," "Standard." Adjustable plunger bar and safety over-center lock. Adjustable jaws.

K-D VALVE KEEPER INSERTERS
Make a hard job easy and make it pay. Strong, fast, easy to load! Self supporting on valve stem, leave hands free. Known and liked by mechanics everywhere.



No. 605 handles nearly every type and size of split keeper made.
No. 336 furnished with 337 Cadillac Compressor set.



K-D 600 VALVE SPRING LIFTER
An old favorite — for L-head motors old and new. Strong, dependable. Adjustable parallel jaws, improved ratchet lock. Right for Auburn, Graham, Hudson, Hupmobile, Lafayette, LaSalle (Str. 8), Nash, Olds, Packard, Pontiac, Studebaker, Willys.

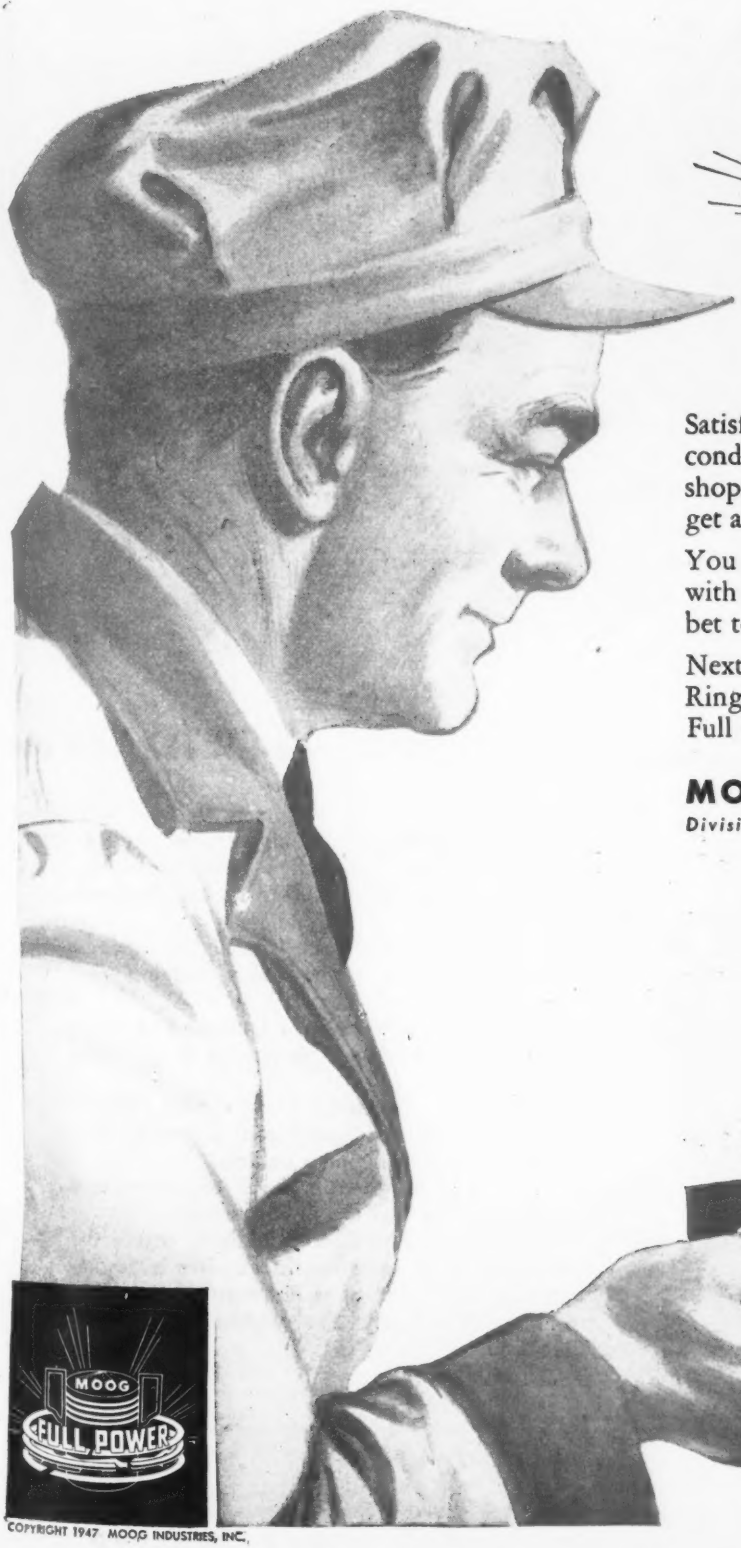
Write for latest Catalog. K-D MFG. CO., Lancaster, Pa., Hamilton, Ont., Canada

K-D TOOLS

HERE'S A PACKAGE OF

FULL POWER

for WORN MOTORS





Satisfy your customers with a Full Power motor reconditioning. When that worn motor comes in your shop, play safe and tell the car owner "You better get a Moog Full Power job".

You know the Moog X-Plus Piston Ring set-up with the famous X-Plus Steel Oil Ring is the safest bet to bring back *Full Power!*

Next time, ask your jobber for Moog X-Plus Piston Rings and prevent costly comebacks! Write us for the Full Power Story.

MOOG PISTON RING COMPANY

Division: MOOG INDUSTRIES, INC., ST. LOUIS 14, MO.

MOOG
X-PLUS
PISTON RINGS

(U. S. PAT. NO. 1,771,198)

COPYRIGHT 1947 MOOG INDUSTRIES, INC.

MOOG X-PLUS FULL POWER PISTON RINGS
MOOG COIL ACTION FRONT END PARTS
MOOG ELECTRICALLY HEAT TREATED SPRINGS

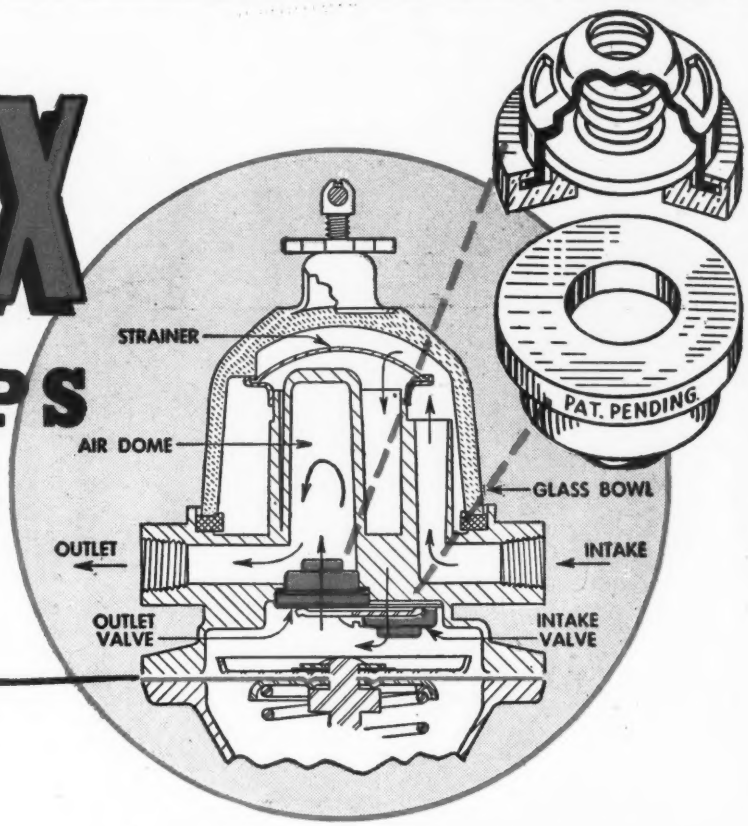
MOTOR AGE, Vol. LXVI, No. 5. Published monthly by Chilton Co., Chestnut & 56th Sts., Phila. 39, Pa. Entered as Second-Class Matter December 27, 1935, at the Post Office at Philadelphia, Pa.; Under the Act of Congress of March 3, 1879. In case of Non-Delivery Return Postage Guaranteed. Subscription price: United States, Mexico, United States Possessions, and all Latin-American countries, $2.00 per year. Canadian and foreign, $3.00 per year; single copies, 25 cents.

New TIGHT-SEAL VALVES

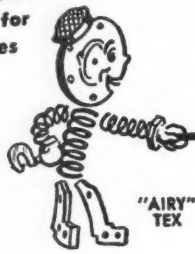
INSURE LONGER LEAK-PROOF LIFE

AIRTEX

FUEL PUMPS



Equipped with AIRTEX DIAPHRAGMS Guaranteed for 50,000 miles



These new valves an exclusive AIRTEX feature

- The new construction eliminates the need for internal gaskets as used in conventional type valves. Valve failure due to gasket deterioration is therefore impossible.
- The possibility of leakage is minimized because there are fewer paths where leaking may develop.
- Every valve seat surface is burnished to insure a maximum degree of contact with the valve disc.
- The precision machined finish of the external surface provides a better seal between valve assembly and fuel pump casting.
- The valve is designed to permit an instant and ample flow of fuel to the carburetor.
- Every valve is tested individually to assure the accuracy of its sealed surfaces. This is accomplished by means of a Rotometer which registers unmistakably the slightest degree of leakage.

ORDER FROM YOUR JOBBER

AIRTEX AUTOMOTIVE DIVISION

Chefford Master Mfg. Co., Inc.
FAIRFIELD, ILLINOIS

Sell an AIRTEX Gasoline Filter-DAMPER with every tune-up job



You have what it takes with the Delco-Remy Line

ORIGINAL-EQUIPMENT PARTS

There's no *limit* when you go after electrical service business with the Delco-Remy line.

Delco-Remy parts bring action because they're original equipment on leading makes of cars, trucks and buses—*have been for years*. With millions of Delco-Remy-equipped vehicles on the road, and millions more being built each year, there's never any let-up in the demand for Delco-Remy service.

The Delco-Remy line includes *all* the parts you need, not just *some* of them. Besides popular, fast-moving parts for everyday requirements, there are parts for older model cars as well. You won't "lose" customers for lack of small-demand parts. The Delco-Remy line is complete!

Make sure the biggest "catch" in electrical service doesn't get away from you. Find out what Delco-Remy—the leader in the field—offers.

DELCO-REMY ELECTRICAL EQUIPMENT FOR AIRCRAFT

Delco-Remy, long the leader in automotive electrical equipment, is now building electrical equipment for aircraft. Delco-Remy will make available the same strong merchandising and service support in this field as it has in the automotive field.

UNITED SERVICE MOTORS

DELCO-REMY—A UNITED MOTORS LINE
Available Everywhere Through
UNITED MOTORS DISTRIBUTORS

Delco-Remy
DIVISION, GENERAL MOTORS CORPORATION
ANDERSON, INDIANA

WHEREVER WHEELS TURN OR PROPELLERS SPIN

Another



WALKER

LUCKY GUY!

PATIENCE PAYS *Extra* DIVIDENDS



WALKER IS MAKING MORE AND MORE DELIVERIES EVERY DAY

● Just ask anyone who owns the sleek, trim Walker Greyhound . . . who knows the easy touch of its grip-fitting handle . . . who's gotten the feel of the powerful pump as it sweeps the "business end" of the jack high into the air. Worth the wait? You'll know the minute you see its action when, with finger-tip pressure on the release, it lowers its load gently, smoothly, and with utmost safety.

And when the day comes that you remove the shipping wrapper from your new Walker Greyhound, you'll collect your "extra dividend," because you can be absolutely sure of its better quality . . . because you'll have complete confidence in its dependability.

Have patience. The jack you really want—a *Walker Jack*—is coming up!

WALKER MANUFACTURING COMPANY OF WISCONSIN, RACINE, WISCONSIN

Also Makers of Walker Exhaust Silencers and Electric Lifts





leads in Jacks



Dick Haymes

AUTO-LITE *Parade*



Can you MATCH it...?

★ **Half-hour Network Radio Every Thursday. 15 Million Listeners. 154 CBS Stations.**

Beautiful 44" standee in 8 colors. Now available

The Auto-Lite Parade of Stars means opportunity for every dealer. Here is the industry's outstanding advertising and promotion program backed by a vast original equipment market, a nation-wide sales organization and practical field help. *Can you match it?*

THE ELECTRIC AUTO-LITE CO.
Merchandising Division
TORONTO, ONTARIO TOLEDO, 1, OHIO

AUTO-LITE

of Stars



Gordon Jenkins



Helen Forrest

SENSATIONAL DEALER PROGRAM

★ **Saturday Evening Post, Collier's, Liberty, Farm Journal, Southern Agriculturist, Successful Farming, and other leading publications.**

★ **Full color pages in the country's greatest Sunday Newspapers through American Weekly and Rotogravure.**

★ **Exclusive advertising in AAA maps and books, nation-wide highway signs, "Plug-Chek" Inspection Service, and the premium Wrapper Plan.**



Here's the improved Auto-Lite Spark Plug Merchandiser—a great salesman, easily available on a variety of attractive deals. Holds more than 200 plugs. Up-to-date spark plug passenger car specifications . . . curved glass front . . . three easily accessible shelves. An exclusive Auto-Lite feature!

SPARK PLUGS

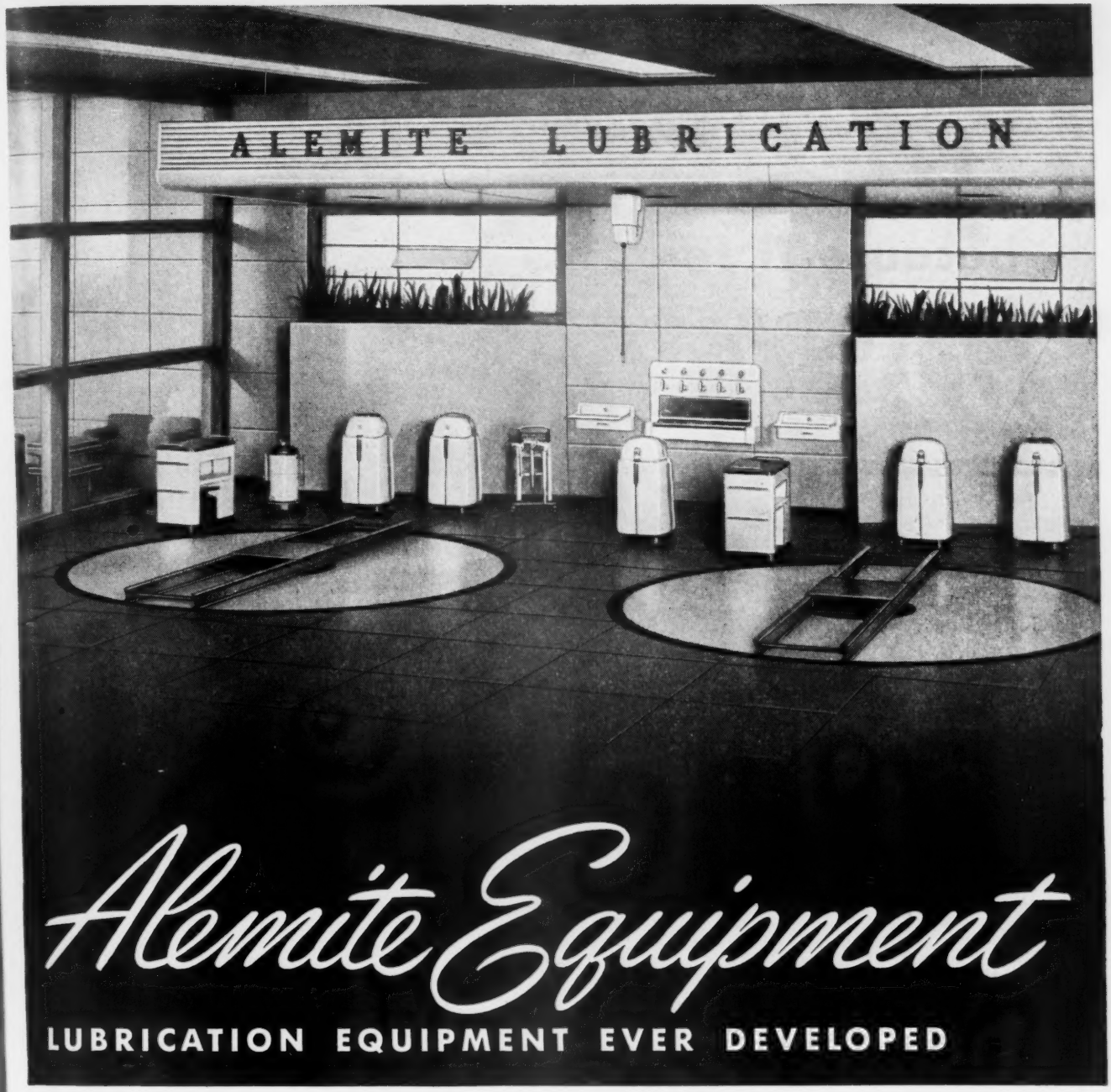
AUTO-LITE MEANS PRECISION MANUFACTURING





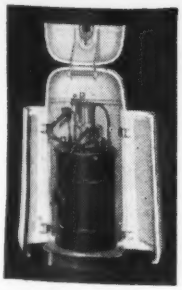
MODERN! STREAMLINED! PACKED WITH SALES AND MERCHANDISING "FLASH". Here's the kind of equipment that will set your establishment head and shoulders above competition. These individual units for portable or stationary installations not only have rich, modern streamlined beauty but they're also super-efficient. You pull in customers by merchandising this beautiful equipment—then you keep them coming back because of the better work you do. The full line includes chassis lubricant pumps, gear lubricant pumps and portable waste oil drains.

ALEMITE
REG. U.S. PAT. OFF.



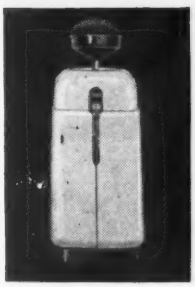
Alemite Equipment

LUBRICATION EQUIPMENT EVER DEVELOPED



OPENS UP COMPLETELY FOR EASY SERVICING

The entire front opens up wide and away from the main cover—the top swings up out of the way. Drums can be changed quickly and easily, without mess and without marring the finish of the unit.



PORTABLE WASTE OIL DRAIN

Matches the other deluxe equipment in beauty. The drain bowl telescopes to any desired height. Use any 100-lb. drum in cabinet to catch waste oil. Unit rolls easily on special, ball bearing, swivel-type casters.

For full details of all models included in the gorgeous new Alemite super deluxe equipment write Alemite, 1857 Diversey Parkway, Chicago 14, Illinois.

Lubrication Equipment

Another Product of STEWART WARNER

My Advertising

because it features

My SIGN!





YES SIR, hundreds of POST and TIME readers right in your own area will see these Pedrick ads. And because each ad features the Pedrick sign, it attracts business to the shop of every Pedrick Franchise Dealer where the sign is on display. It is really *your* advertising because it features *your* sign to your customers and prospects.

National consumer advertising is only part of the carefully-planned, business-getting, five-star program for Pedrick Franchise Dealers. Ask your distributor for full information on the Pedrick Franchise Dealer Plan, or write to us direct. WILKENING MANUFACTURING CO., Philadelphia 42, Pa. *In Canada:* Wilkening Manufacturing Co. (Canada) Ltd., Toronto.



Pedrick

"HEAT-SHAPED"
PISTON RINGS



Quick Starts ...Long Life

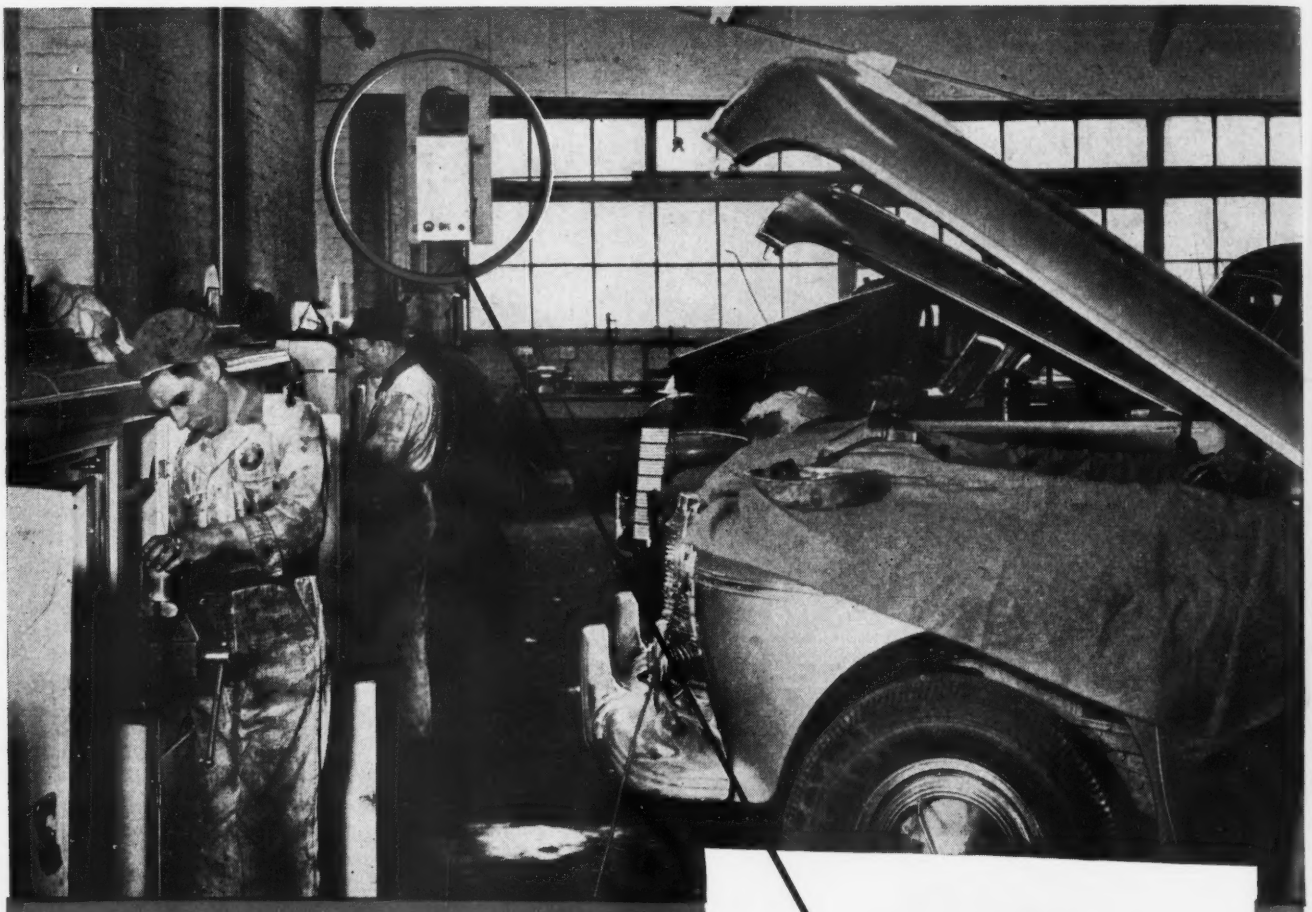
WILLARD BATTERIES — Automobile Truck and Bus • Radio • Motorcycle Tractor • Aircraft • Marine • Diesel Stationary — Sold and serviced by Willard Dealers everywhere.

"SAFETY-FILL" BATTERIES

Willard

Dependability • Performance • Long Life

WILLARD STORAGE BATTERY CO. • CLEVELAND • LOS ANGELES • DALLAS • TORONTO



DESTROY EXHAUST GASES

THAT CAUSE HEADACHES . . . HAMPER PRODUCTION . . . COST MONEY!



General Ozone Regulated Ionizing Equipment **DESTROYS EXHAUST GASES** electrically, *without opening doors and windows* —leaves air fresh . . . clean! Worker efficiency goes up—repair and service time is reduced to a minimum when you provide your employees with improved working conditions.

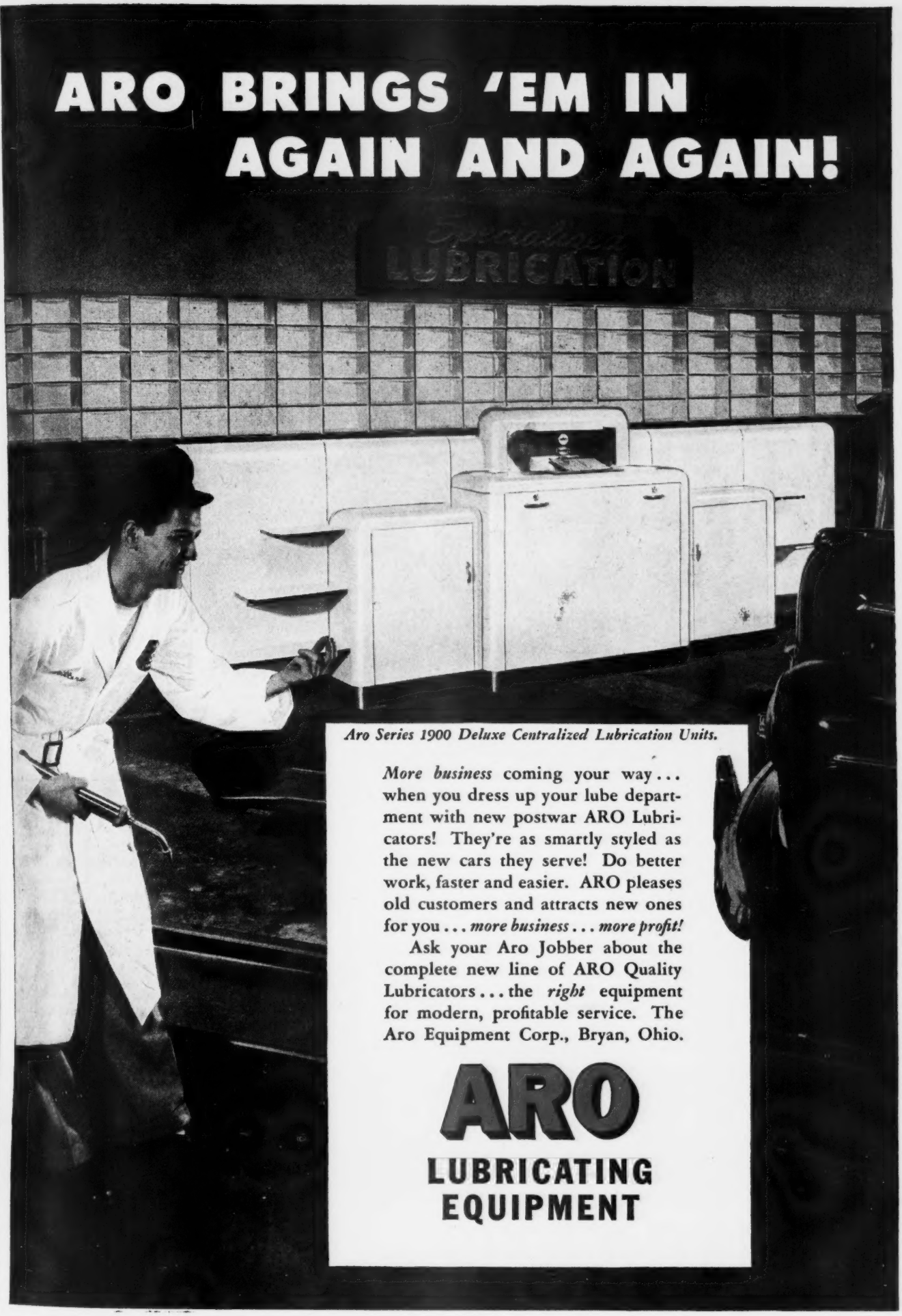
Hundreds of car dealers and garage men have installed these money-saving units and now work in clean, fresh, ionized air. Nothing to set up . . . no chemicals or refills . . . no special wiring. Just plug it in and it goes to work! Write today for complete information!

GENERAL OZONE CORPORATION
17 West Sixtieth Street, New York 22, N. Y.
New York · Chicago · Denver

GARAGE *AirClear*

Manufacturers of ozone generating equipment for garages . . . cold-storage warehouses . . . refrigerated cars . . . walk-in coolers . . . air recirculating systems . . . homes . . . hospitals

ARO BRINGS 'EM IN AGAIN AND AGAIN!



Aro Series 1900 Deluxe Centralized Lubrication Units.

More business coming your way... when you dress up your lube department with new postwar ARO Lubricators! They're as smartly styled as the new cars they serve! Do better work, faster and easier. ARO pleases old customers and attracts new ones for you... *more business... more profit!*

Ask your Aro Jobber about the complete new line of ARO Quality Lubricators... the *right* equipment for modern, profitable service. The Aro Equipment Corp., Bryan, Ohio.

ARO

LUBRICATING EQUIPMENT



but *none* for brake readjustments

Installing Inlite is like writing your customers a ticket for more miles of smooth, straight-line stops — without call-backs for brake readjustments. Inlite goes on faster — comes into normal operation at once — and gives the same performance on the first braking as at 10,000 miles.

Inlite goes on right and stays right because every segment has the same uniformity of structure and the same long wear factor that assures brake-sure motoring over the miles.

Speed your profits and speed satisfied customers on their way with Original Equipment Quality Inlite — available through your jobber.

A General Motors Product

Genuine ORIGINAL EQUIPMENT BRAKE LINING

UNITED SERVICE MOTORS

Available Everywhere Through United Motor Service Distributors

INLAND MANUFACTURING DIVISION, *General Motors Corporation*, DAYTON, OHIO

★INLITE★
BRAKE LININGS

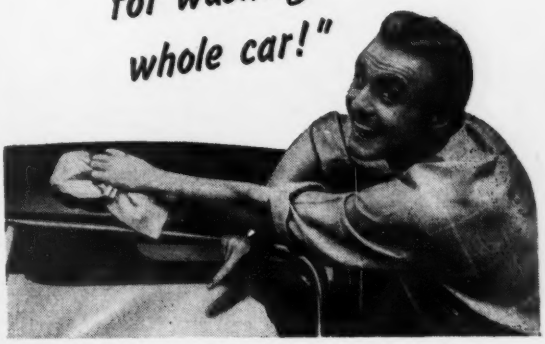


Everybody's talking about new "ETHYL"* CLEANER

"Look! A great new cleaner . . . and it's tops for washing windows!"



"See here! I rate 'ETHYL' Cleaner tops for washing the whole car!"



That's right, folks agree . . . New 'ETHYL' Cleaner's tops for so many things! That's one of the many reasons why I stock it!

HERE ARE 5 MORE REASONS

1. **Every sale means a 40% protected margin of profit!**
2. **The prestige of the famous "ETHYL" trademark name!**
3. **The demand created by the national consumer advertising campaign!**
4. **New "ETHYL" Cleaner is rapidly becoming a household buy-word!**
5. **New "ETHYL" Cleaner sells quickly—doesn't sit long on the shelf!**

New "ETHYL" Cleaner is being hailed, across the country, as the cleaner that's tops for so many uses! Men rate it high for car washing . . . women say it's grand for so many washing jobs around the house, for dishes, glassware, pots and pans, fine fabrics, windows. In any case . . . you have a great potential market. Stock "ETHYL" Cleaner. Demonstrate "ETHYL" Cleaner. Explain "ETHYL" Cleaner. It's sure to sell! Write Ethyl Specialties Corporation, 21 West Street, New York 6, N. Y.

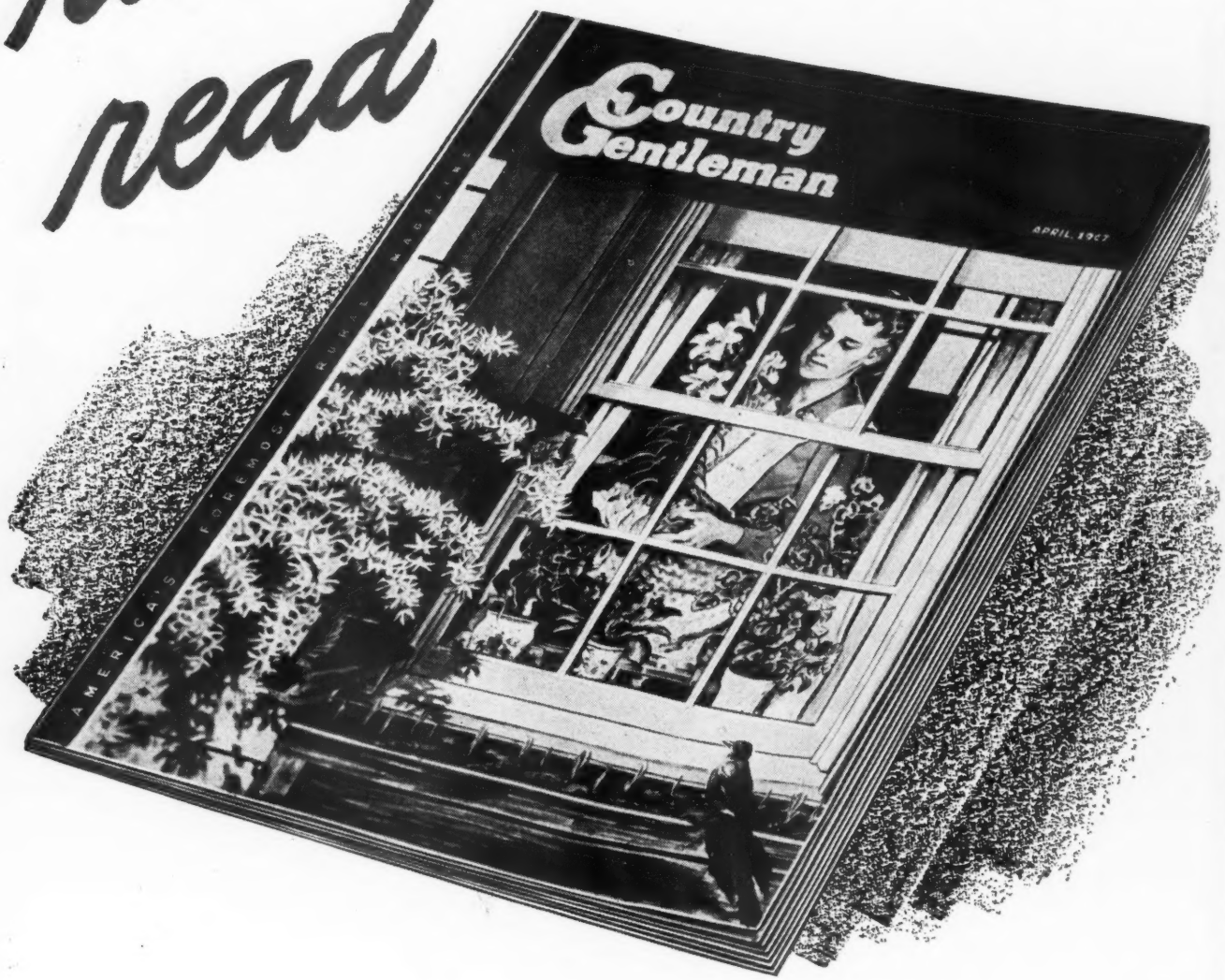


*TRADE MARK REG. U. S. PAT. OFF.

ANOTHER "ETHYL" PRODUCT

ETHYL CORPORATION · DISTRIBUTED BY ETHYL SPECIALTIES CORP.

Your best rural customers read



Rural auto dealers know this. Asked what rural magazine would be most effective, from an advertising standpoint, in helping them sell their prospects

they chose Country Gentleman almost 3 to 1

Automotive advertisers know this. They invest more advertising dollars in Country Gentleman than in any other farm magazine.

FRAM WHAMS AWAY AT...
"Your Greatest Unsold Market!"

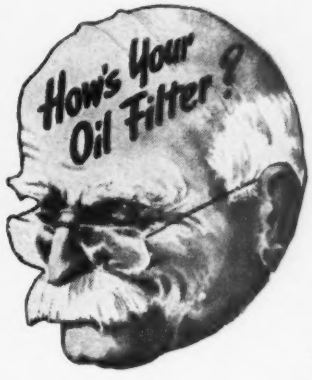
"New and Old Car" Campaign in Full Stride To Sell More Filters and Cartridges For You!



Fram's "New and Old Car" Campaign is going great guns! Biggest gun is this eye-catching poster—yours at no cost. Does a bang-up sales job because this year cars are either *new* or *old*—there's virtually nothing in between. And 50% of all new and old cars are not filter-equipped—they need a complete Fram . . . while 1 out of 3 *old* cars need new cartridges. That makes filters and cartridges "your greatest unsold market" . . . your great sales opportunity for '47—so get in the campaign and cash in!

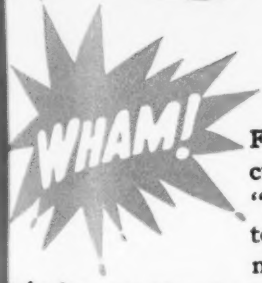








Fram backs you up with "New and Old Car" advertising in national magazines . . . with displays, signs, other helps that mean plenty of profits to you. Ask your jobber salesman about the Fram "New and Old Car" Campaign on his next visit. Better yet, phone him now! Stock up on Fram filters and cartridges . . . get your posters and cutouts . . . and reap a whirlwind of *extra* sales and *extra* money! Fram Corporation, Providence 16, R. I. *In Canada:* J. C. Adams Co., Ltd., Toronto, Ontario.



Free "How's Your Oil Filter?" cutouts of "Youngster" and "Oldster" for you to hand motorists make a direct hit—and make Fram filter and cartridge sales for you! Already dealers from coast to coast report big jumps in sales and the campaign's just opening up!



FRAM OIL & MOTOR CLEANER

Cleans the Oil that Cleans the Motor

"I make



The
Original Equipment
Line

better profits..."*

HERE'S WHY WE CALL IT "Sta-ful"

★ **Fibre-glass mats help to keep the power-producing material from shedding—add to battery life. This makes possible a smaller sediment well at the base of the battery which, in turn, permits room for a liquid reservoir with over 3 times the usual capacity at the top of the battery.**

★ **This larger reservoir keeps plates covered and active long after the plates in ordinary batteries are exposed and inactive. Because of its revolutionary new design, the Auto-Lite "Sta-ful" Battery needs water only 3 times a year in normal car use; its extra plates deliver added power.**

HERE'S WHAT "Sta-ful" DOES FOR YOU

★ **The Auto-Lite "Sta-ful" Battery drastically reduces the time and bother of battery servicing. Its exclusive features give you a sales leader with excellent profit possibilities backed by the greatest promotion campaign in Auto-Lite history.**

★ **One big reason why batteries fail is lack of water. Ordinary batteries frequently need water added once a month, but most people just won't take time to have it done. That's why the Auto-Lite "Sta-ful" principle means more satisfied customers.**

* *From an unsolicited testimonial written by* FRANK S. DUNHAM, *5462 Goethe Avenue, St. Louis 16, Missouri*

THERE'S MORE PROFIT

MORE PROFIT IN THE RING LINE

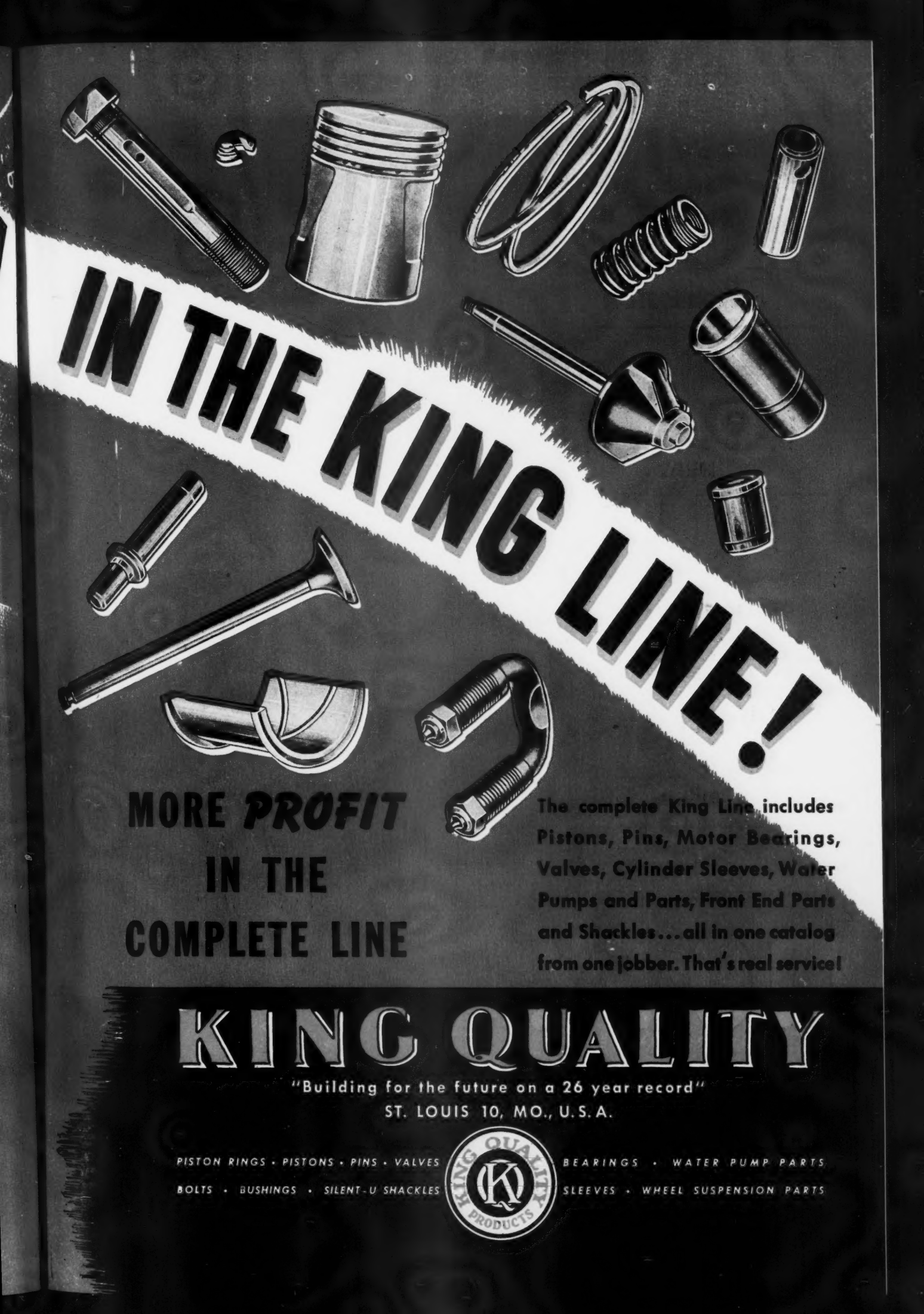


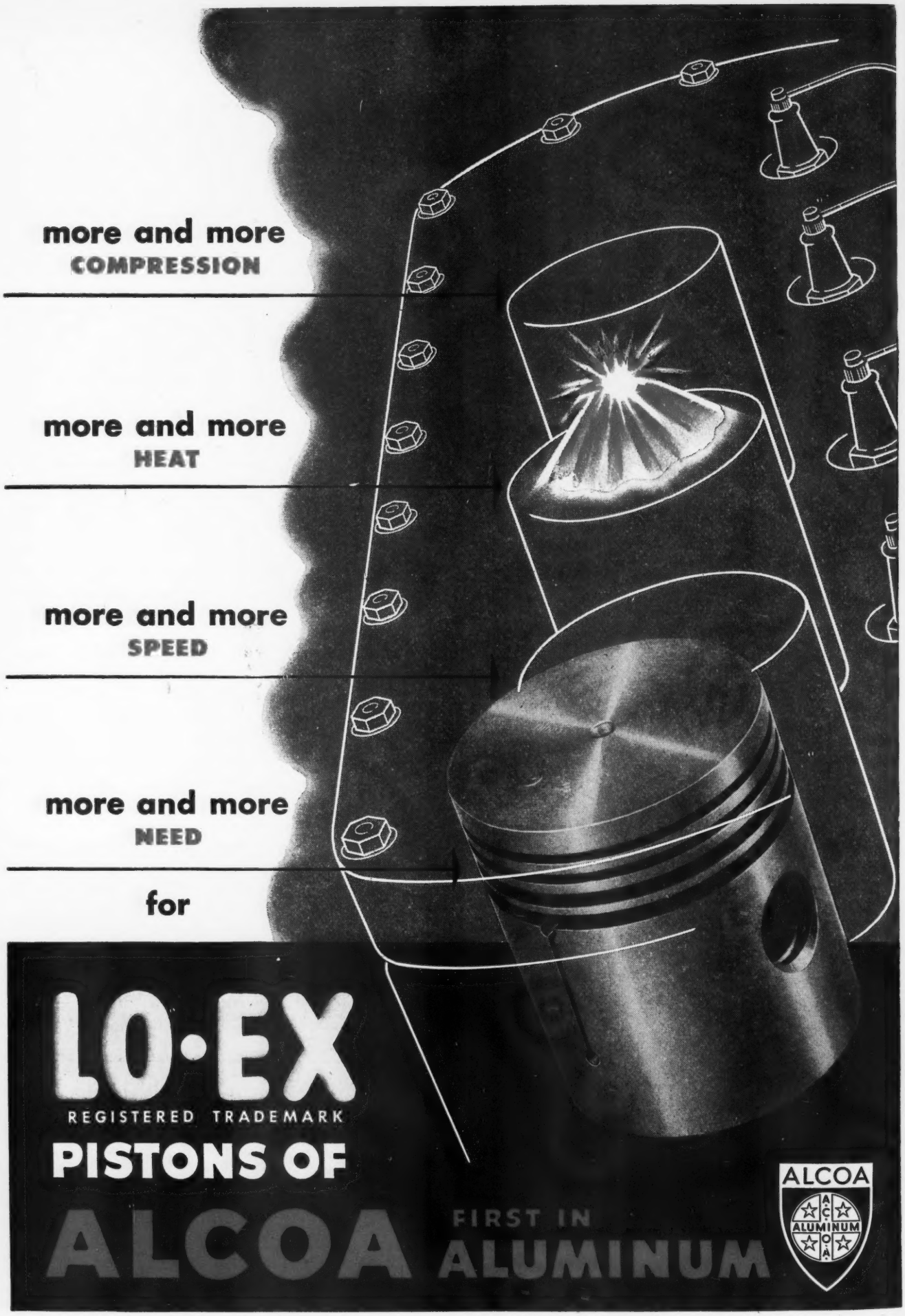
Rebore-Rebuild Expander Piston Rings with Iron Expander Rings.

Engineered Set Piston Rings for Re-Ringing.

Service Special Piston Rings with Steel Expanders for Dealers' Service Department.

The King Ring Line includes Engineered Sets, Rebore-Rebuild Sets and Service Special Sets... the right ring for every job, for every make and model of motor.


IN THE KING LINE!
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FOR AUTOMOTIVE SERVICEMEN

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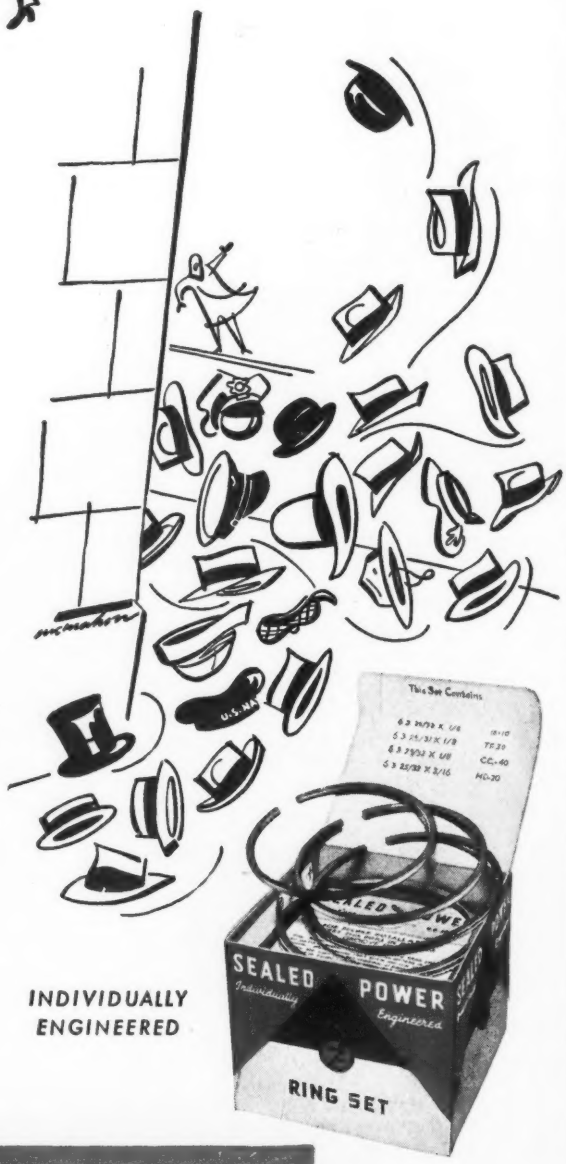
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SEALED POWER PISTON RINGS

BEST IN NEW CARS! ★ BEST IN OLD CARS!

Keep your War Bonds! Get $4 for $3!



NEWS BULLETIN

★ Shell union oil says that 1947 gasoline consumption will top that of 1946.

★ Kaiser-Frazer March financial statement would have shown a profit except for expense involved in getting into production of its own engines, according to Edgar Kaiser, president.

★ U.A.W. has asked G.M. for 23.5 cent hourly raise increase.

★ New Packard convertible will go into production in June.

★ Kaiser-Frazer extends option on Willow Run for 18 years - until December, 1965.

★ Export licenses to ship new or used cars abroad were dropped March 31.

★ Walter Reuther said that action of C.I.O. United Rubber Workers in settling for an 11½¢ hourly raise would "in no way" affect the U.A.W's demands for an industry-wide 23-1/3 cent raise for its 900,000 auto workers.

★George T. Christopher, Packard's president, stated that the last half of 1947 has possibilities of doubling the first half of the year production-wise. However, first half of current year will not materially exceed last half of 1946.

★ Borg-Warner plans to erect a new plant in Memphis, Tenn. to build universal joints.

★ International Harvester stock hits new high.

★ Federal Reserve survey finds industrial production still at record levels.

★ With ice passing out of the Great Lakes, ore shortages are expected to dwindle.

★ Export controls were lifted from new and used passenger car tires on April first.

★ G.M.'s 1946 payroll down due to strikes.

★ Passenger car tire output reached 6,888,566 units - a new high, 200,000 over the previous peaks.

★ Chrysler plans to start construction of a $3 million parts plant in Wilmington, Del., some time in April.

Slants on the NEWS

Weekly Production of Cars and Trucks in U. S. and Canada*

Week Ending	1947	Corresponding Week in 1941
Jan. 4	53,437	76,690
11	64,828	115,935
18	75,166	124,025
25	94,345	121,948
Feb. 1	94,114	124,400
8	89,958	127,675
15	97,276	127,510
22	103,400	127,740
29	104,802	126,550
Mar. 1	105,175	126,550
8	104,048	125,915
15	105,496	131,410
22	108,472	123,805
29	100,261	124,165
Total	1,193,667	1,577,768

*Compiled by Ward's Automotive Reports

Number of Farm Vehicles Increases 54 Per Cent

Speaking of the farm market which we are discussing elsewhere on this page, it is important to note that the number of automobiles, trucks and tractors on farms has greatly increased since 1940, according to a study based on census figures.

The 1945 Census of Agriculture shows that on January 1 of that year, there were 848,317 more tractors than in 1940, an increase of 54 per cent. Approximately one farm in every three now owns one or more tractors.

The percentage of increase in tractors was greatest in the South Atlantic and East South Central regions—113.3 per cent and 106.4 per cent respectively. Typical of the speedy mechanization of the South Atlantic is Georgia, where the number of tractors by 1945 was 164 per cent higher than it was in 1940. Such states as Virginia and Arkansas showed increases of about 100 per cent in tractors. In other farming areas, New York reported tractors up 58 per cent, Illinois up 38 per cent and California, 45 per cent.

Motor trucks increased 440,000—from slightly more than a million in 1940 to nearly one and a half million, an increase of 42.3 per cent. Mountain, West South Central and South Atlantic regions lead with percentage gains of 56.9, 54.2 and 51.2 per cent in that order. More than one farm out of every five now owns one or more motor trucks.

The number of automobiles on farms increased by about 8,000, despite restrictions on sales and production during the war years, which decreased total passenger car registrations by about two million. Rural shops and maintenance establishments in agricultural centers are doing a constantly larger business as a result of the increased registration and greater prosperity of the farmer.

Car Manufacturers Double Last Year's Production

In spite of the continuing material shortages, the car and parts manufacturers have hung up a remarkable record in producing over one million vehicles in the first quarter of the year. In 1943 it took six months to equal this record, and if the present rate is continued, the total for the year should be well over 4 million vehicles.

Steel scrap continues to be the most serious shortage and the spectre of labor trouble is always present. But in general Detroit is optimistic. At least, its pessimism has materially decreased.

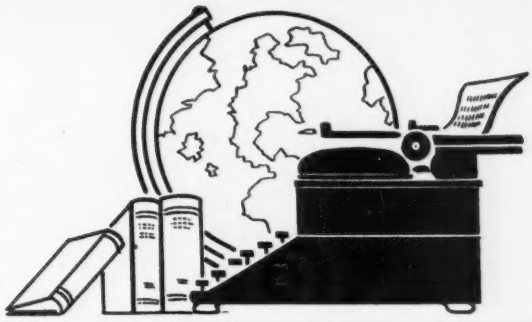
SAE Recommendation Stops Locking of Bumpers

Every driver of an automobile, whether he is actively connected with the industry or not, will welcome the adoption of a Society of Automotive Engineers recommendation designed to eliminate the locking of car bumpers. The new standards provide that front and rear bumpers will not dive below or rise above 18¼ inches on a normal stop. Such a design becomes increasingly important as traffic becomes more congested.

Price Cutting Seems Doubtful in Near Future

While highly commendable, it would certainly seem to be going against human nature to reduce car prices when manufacturers are unable to fill existing orders. So no one seemed surprised when there was no stampede to follow the lead of Ford, Plymouth and International Harvester in cutting prices. The action of these companies is virtually without precedent and extremely laudable, but in a materialistic world, the reluctance of other manufacturers to follow suit is easily understood, even though they were publically urged by President Truman to do so.

A reduction in price would reduce company earnings but it would also still further stimulate sales which, at the particular moment, is not necessary. Probably the main affect of this effort of the Government to reduce further inflation would be to stimulate the price of so-called used models, thus still further confusing the price picture.



Agricultural Prosperity Aids Automobile Industry

When the price of wheat reached $3.00 per bushel, the highest point in 30 years of trading, many readers probably dismissed it as an interesting statistical fact. Actually, it is of extreme importance to the automotive industry as it, in all probability, spells continued prosperity in the farm areas and when the farmers have money to spend, they buy cars, trucks, tractors and automotive maintenance.

Prosperity in the farm states and rural regions would be reflected throughout the entire nation. Such conditions in the agricultural sections will undoubtedly have a stronger effect and will tend to offset failures in small retailers of electrical appliances and so forth, which recently have risen.

While on this subject it is interesting to note that the Department of Commerce considers the possibility of a severe business decline extremely remote. A mild recession in business activity and a moderate drop in prices about the middle of the year is, however, expected.

Five Billion Dollars Is Maintenance Figure

Based on U. S. excise tax receipts, the wholesale value of repair parts and accessories last year totaled $1,690,000,000. That is the biggest year in the history of the industry and on a retail basis the total would probably exceed $2,200,000,000 and if the labor charge for installing such parts is added, the maintenance industry could be rated a $5,000,000,000 industry—and that's exclusive of gas, oil, tires and a lot of other things.

Maintenance Market Continues Firm As Registrations Pass 33 Million Mark

One of the strongest indices of the strength of the automotive maintenance market is the report that fewer than 400,000 cars per year were scrapped in 1945 and 1946. During the four war years the scrappage totaled slightly more than 5 million cars which is somewhat greater than the current rate but far less than the peace-time rate of some two million cars annually. Undoubtedly the reduced rate of scrappage results from the demand for cars from demobilized military forces and the high per capita earnings.

Total registration of motor vehicles—27,728,889 cars and 5,801,541 trucks and buses, is now 33,530,430, of which only 2 million vehicles are of current production. The rest may be considered as having an average age of ten years and with speedometers indicating 75,000 miles.

The rate of scrapping cars will in time increase, but parts and labor to keep these cars on the road as long as possible will remain at breath-taking levels for a long period.

Another factor bearing on the general situation is the price of used cars. Once more these have stiffened and activities of the Southern buyers and "ridge runners" in the Northern wholesale markets continue unabated. Undoubtedly the demand for and the price of used cars will remain at relatively high levels as long as new cars are so high in price.

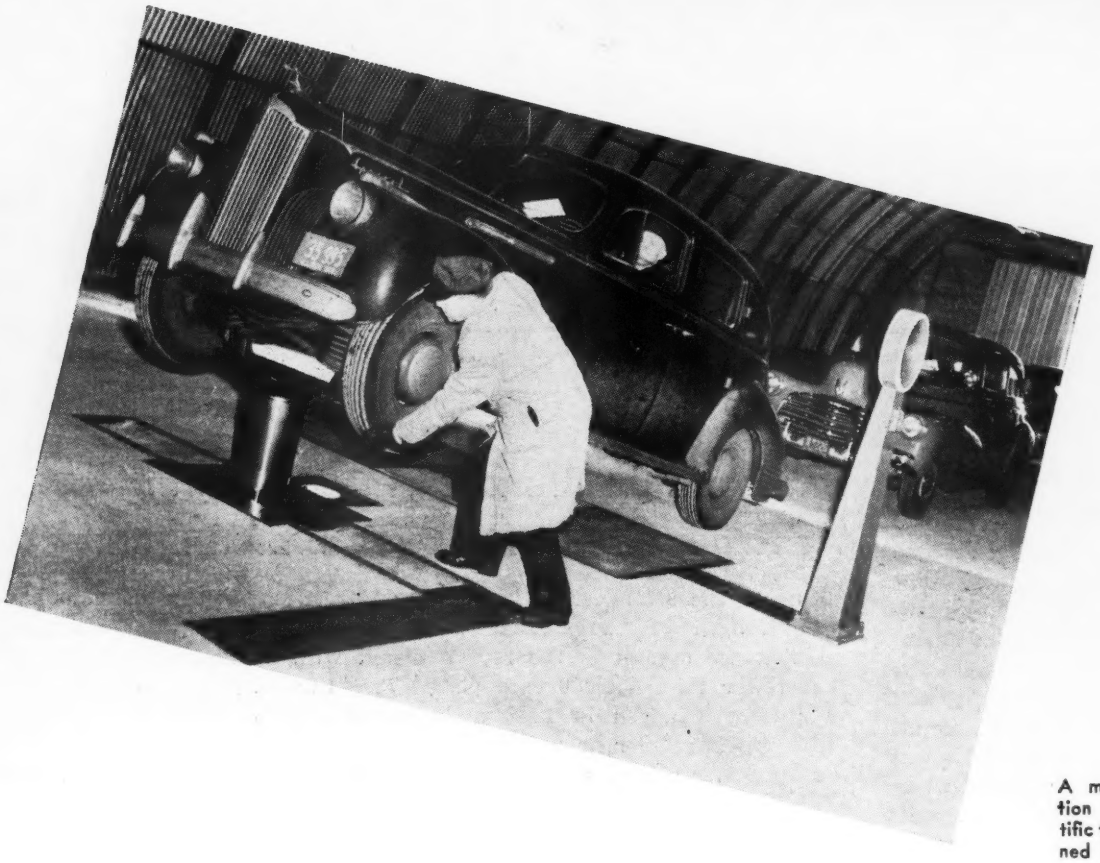
New Passenger Car Registrations for January, 1947*

	Units	Per Cent of Total
Chevrolet	36,981	21.28
Ford	30,351	17.46
Plymouth	15,845	9.11
Buick	13,124	7.55
Oldsmobile	10,944	6.30
Dodge	10,587	6.09
Pontiac	10,320	5.94
Nash	6,766	3.89
Mercury	6,424	3.70
Studebaker	6,405	3.68
Hudson	5,604	3.22
Chrysler	5,188	2.98
De Soto	3,956	2.28
Cadillac	2,924	1.68
Packard	2,246	1.29
Kaiser	2,059	1.18
Lincoln	1,298	.75
Willys	1,084	.62
Frazer	1,025	.59
Crosley	669	.38
All others	47	.03
Total	173,847	100.00

*Data from R. L. Polk & Co. is incomplete. Does not cover returns fom Louisiana, Maine, Missouri and New York.

New passenger car registrations for 44 states and the District of Columbia amounted to 173,847 during January 1947. On the basis of these partial returns it is estimated that total new car registrations for January will be approximately 204,000 units, a decline from December of approximately 70,000 units or 26 per cent. No comparisons can be made with January a year ago as the new registrations for the first six months of 1946 were combined.

Arranged according to manufacturing groups, General Motors leads the field with 42.75 per cent of total January new registrations, followed by Ford Motor Co. with 21.91 per cent and the Chrysler Corp. with 20.46 per cent. The independent manufacturers accounted for 14.88 per cent of new car registrations.



A modern inspection station equipped with scientific testing equipment manned by trained inspecton.

Inspection is a Must

Periodic inspections find mechanical weaknesses before they cause major breakdown or accidents

by CHARLES M. KENYON

AFTER a car traveling fifty miles per hour has failed to round Dead Man's Curve, it is pretty hard to say whether the driver steered the car off the road or the car steered the driver. Excessive speed will probably be assigned as the cause of the accident, but the true cause will never be known. Another car driven by another driver at the same speed will turn that same curve safely. But this much we do know. Any person in his right mind would much rather approach Dead Man's Curve knowing that his lights, his steering gear and front end, and his brakes were in good condition.

Periodic inspections of motor vehicles in the various sections of the country where adequate records are kept prove that over 50 per cent of the cars on the road the day before an inspection period begins are defective in some way. The percentage of rejections is usually much higher in the areas where cars are being inspected for the first time. The cumulative effect of periodic inspections is to keep better cars in better condition on the highways. Driving these cars is safer and accident costs are less to the car owner. Keeping these cars in condition means more business for the repair shop owner.

There are two major inspection systems used today. One uses special inspectors, often State Police, and a state owned and operated inspection unit. The motorist takes his car to the testing place during the designated period and the results of the tests are given to him by the inspectors. If the results are unsatisfactory, he then goes to any repair shop he chooses, has the necessary work done there, then reports back to the inspection station for his recheck. Under the other system certain repair shops are appointed as official inspection stations. These shops are empowered to test the vehicle, to make the necessary repairs or adjustments, and to issue stickers. There

(*Continued on page* 104)



What's Behind Repair Prices?

by ***BILL TOBOLDT***

The higher cost of repair prices is largely due to more complicated design in both cars and trucks

CAR owners and fleet operators are starting to kick about the high cost of maintenance, and as time marches on and the country proceeds along the economic cycle these objections will become more frequent and increasingly severe. Some of the increase is due to monetary inflation which affects both labor and parts costs; in some isolated cases the increase is due to deliberate gouging on the part of the shop operator; but in many instances the higher costs are directly due to more complicated design of the car or truck.

There is scarcely a unit on today's automobile that doesn't cost more to service and maintain than the comparable part did 15 years ago. In other words, while cars are definitely better, maintenance costs have risen in an alarming manner.

In 1932 for example, the average car had semi-elliptic springs all around and a total of about 15 lubrication fittings. Today most cars have independent suspension at the front, the change has increased the lubrication points to 25 or 30. To the average car owner this does not mean much, but to the fleet operator it means that each car will take nearly twice as long to lubricate as it did formerly, and to the car dealer and independent shop operator who hasn't increased his charges for lubrication, it means that he can now lubricate only one-half as many cars in a day. To rebush a front spring formerly required about one hour. On a conventional knee-action job of today, it takes approximately three times as long to rebush the control arms.

In all probability the transmission will receive the greatest criticism from the fleet operator and the owner who is trying to reduce upkeep. Nearly all cars in 1932 used a three speed, spur gear transmission. The shift lever stuck out of the floor boards where it rubbed the knees of the extra passenger if three persons rode on the front seat. In first and second speeds

(*Continued on page* 68)

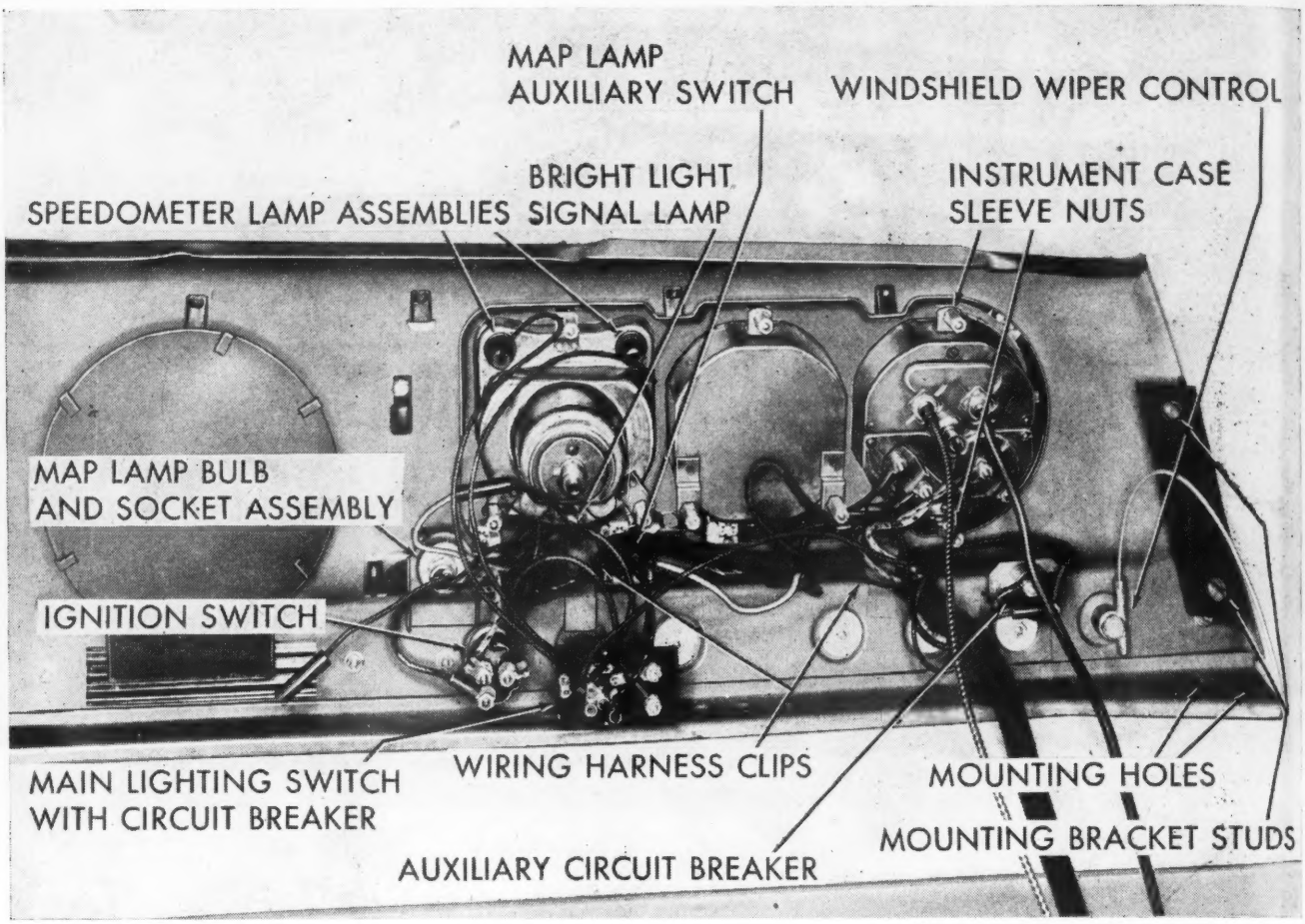


Fig. 1. The instrument board and its accessories, looking from the forward, or engine side, mounting studs are at far right.

The first of two articles on the disassembly and assembly of the body units on both the Champion and the Commander

BODYWORK on the Current Studebaker

THE highly advanced bodywork on the 1947 Studebaker Champion and Commander models is actually of very straightforward design and construction, and can be handled in the shop without special equipment or undue complication. The following procedures, adapted from factory information, apply to both the Champion and the Commander, in all body types.

To remove the instrument board (Fig. 1), one battery cable is disconnected, the hood lock control wire is disconnected at the hood lock latch lever, and the hood lock control wire tube is disconnected at the hood lock latch plate. The clips which hold the hood lock wire tube to the left front fender skirt are then removed.

The instrument case is released by removing the two sleeve nuts which hold it to the instrument board, and it is pushed forward out of the board. The



Fig. 2. Pressing inward on the upper outside corner of the windshield to remove it.

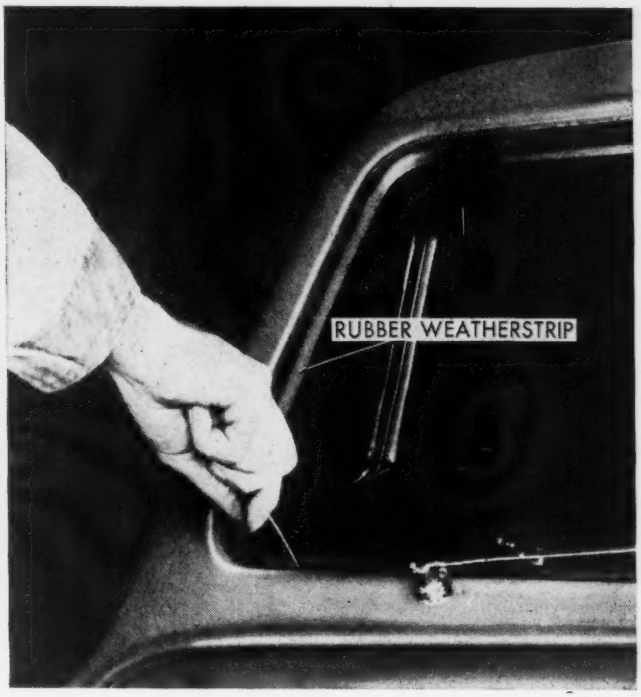


Fig. 3. Pressing the outside weatherstrip over the flange of the windshield with a broad putty knife or a similar instrument.

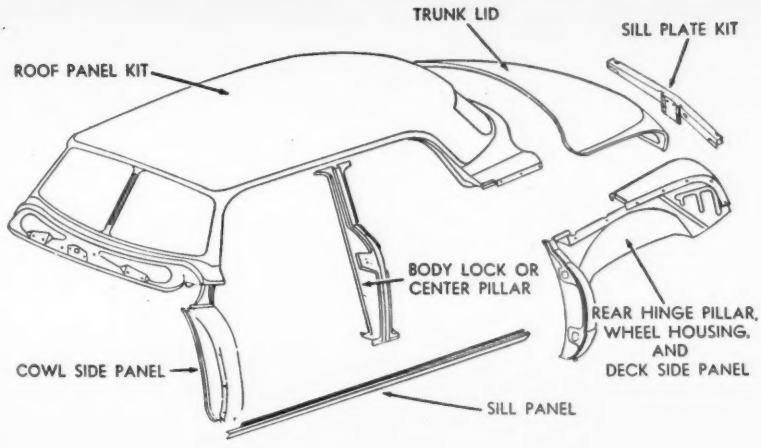


Fig. 4. An exploded view of the body units of the current 4-door sedan, on both chasses.

by *RICHARD L. REDDY*

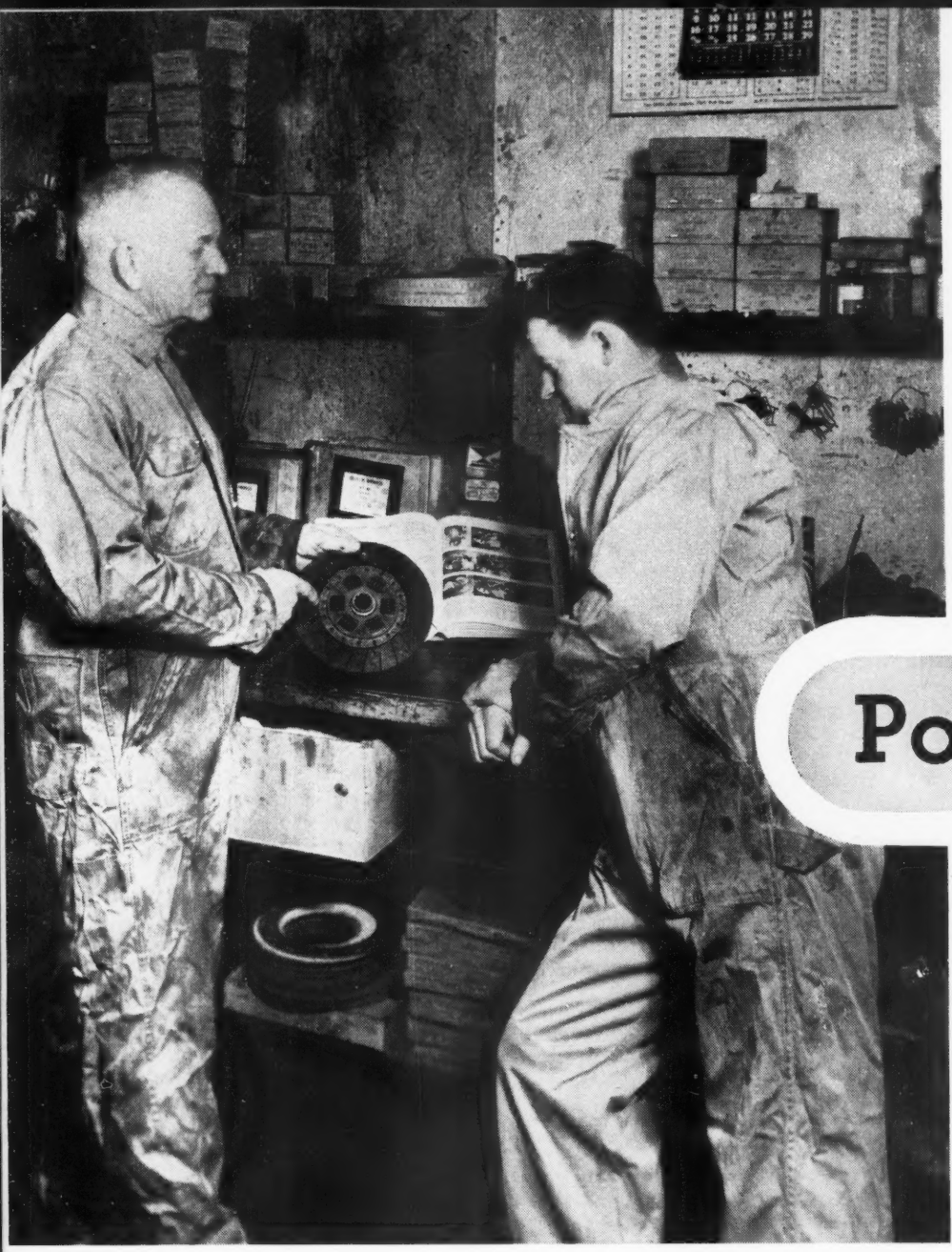
speedometer cable should be uncoupled at the head.

After the jamb nut on the front of the board, which holds the hood lock control sleeve in place, is unscrewed, the hood lock control assembly is pulled rearward out of the dash grommet and instrument board. The windshield wiper control knob is then pulled off its shaft; and after the spanner nut has been removed from the sleeve on the back of the instrument board, the control sleeve is pushed forward out of the board.

The instrument lamp and lighting switch knobs are pulled off the switch, the spanner nut which holds the switch sleeve to the board is removed, and the switch and circuit breaker are pushed forward out of the board. The ignition switch can be removed after removal of the spanner nut on the back of the board.

The map lamp auxiliary switch is removed, and the speedometer lamp bulb and socket assemblies and the bright light signal lamp assembly are pulled forward to disconnect them from the speedometer. The map lamp bulb and socket are then removed from their holder, and the wiring harness and auxiliary lighting circuit breaker are removed from the board.

(*Continued on page* 138)





Pop Strikes

"And furthermore," continued Pop, "if you looked in your Motor Age manual, you'd see that there's a bellows seal on the clutch side of the flywheel to keep the oil from leakin' out on the clutch plate."

IT was not merely the bright, warm April morning that put Larry Tate in such good humor. "I sure cleaned up last night," he told Tommy Winters, as they stood looking at the panel delivery truck that needed a ring job.

"It was only Thursday," said Tommy with a dead-pan expression. "Why did you have to take a bath?"

"I wasn't takin' a bath. I was playin' gin rummy down at the political club. And was them guys suckers! I slipped 'em so many gins you'd a thought I was a barkeep. And when I wasn't doin' that I was knockin' — "

"I ain't crazy about knockin' nobody," said a familiar voice behind him, "but don't you think it's about time we got a little work done around here this morin'?"

Larry turned to find Pop O'Neill regarding him with a glance that would have frozen the mercury in a thermometer.

"What do you think we have been doin'?" asked Larry belligerently.

"That's a mystery. This job was supposed to go last night."

"The way work's pilin' up in here, we'll be lucky to get it done by tonight. That's all we know around this joint—work and more work."

Pop grinned. "And more on the way," he said. "Bob Furness just phoned to find out if we could do a clutch job for him today."

"Too bad," said Larry. "We're all jammed up."

"Well, we can't tell him that now. He's already on the way. I told him to look you up. I've got to take the missus to the doctor's."

Larry glared after Pop as the latter returned to the shop office. "Bob Furness," he muttered. "There's a guy Pop ought to have workin' here. Then he could fire him every ten minutes."

Tommy's expression did not change but Larry ex-

Replacing the oil-soaked clutch plate is doing only half the job, points out Pop O'Neill, for the leak that caused the trouble must be found and plugged too



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BASIC COURSE FOR
MECHANICAL TRAINING

by J. EDWARD FORD

Oil on Clutch Trouble

ploded with laughter. "Don't you get it?" he asked. "Fire—furnace."

"I wouldn't talk like that about Mr. Furness," said Tommy. "He's pretty important."

"Oh, he is, huh? What's he do?"

"He's superintendent down at the textile mill."

"Another one of Pop's big-shot friends," jeered Larry. "Well, I'm the guy who can tell him off."

As he ceased speaking, he noticed a man coming out into the shop from the office. The stranger was tall, with broad shoulders and beetling eyebrows. He approached with swinging strides.

"Where will I find Larry Tate?" he boomed.

"Right here," said Larry, punching his breastbone with a thumb.

"Well, I'm Bob Furness."

Larry looked up at the somber face for only a moment. "Yes, sir," he said.

"My clutch is grabbing," said Furness. "Will you see what you can do about it?"

"Are you sure it's your clutch?" asked Larry.

"No," said Furness. "It might be a bronco that got stuck in my gas line and started bucking."

Larry looked at him sharply, trying to make up his mind whether a retort in kind would be safe. He decided it wouldn't be. "Roll it in," he said to Tommy, "and I'll have a gander at it."

As soon as Tommy drove in the 1942 Chrysler, Larry got into the front seat and tried the clutch. It was grabbing badly.

"Ever have any trouble like this before?" asked Larry, easing himself out of the car.

"Yes," said Furness, looking at him a trifle queerly. "About a month ago. I remember the man who did it."

"Well, whoever fixed it up for you sure give you a lousy job. Glad you didn't get it done here."

The merest suggestion of a smile played around Furness's lips. "But I did," he said. "And, if my memory is still clicking, you're the man who worked on it."

Larry was too abashed to reply.

"Think you can do better the second time 'round?" asked Furness.

Pulling himself up straight, Larry declared, "If I don't lick that grabbin'," he said, "I hope the roof falls in."

Tommy ducked and put his arms protectingly over his head. Furness forgot his dignity and laughed. He was still chuckling as he walked off. Larry turned on Tommy angrily. "Tryin' to make a monkey outa me?" he demanded.

"Well," said Tommy, "you didn't fix it the first time."

"Just for bein' so smart," said Larry, "suppose *you* take a crack at it."

"Okay. I can't do much worse than you did."

The 12 o'clock whistles were blowing when Tommy went to the washroom, where he found Larry already cleaned up and ready to go.

"What's takin' you so long with that clutch?" asked Larry.

It's all lying out there for you to look at," said Tommy.

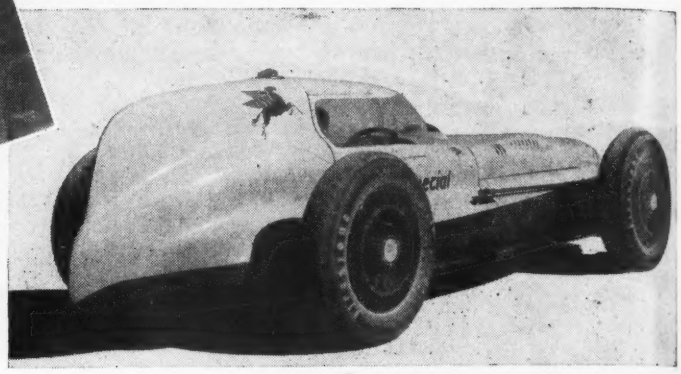
"Linin' shot?"

"Not exactly. It's all covered with oil."

(Continued on page 72)



Under the hood . . . showing the intercooling airscoop, oil and water radiators, and engine details. Louis Welch, owner, is working on the engine of the car, while driver Ralph Hepburn stands beside the cockpit.



A right rear view of the car as it appeared at the Muroc Dry Lake run, showing details of the specially fitted enclosure and vertical stabilizing fin used for this speed trial.

Getting Ready for Indianapolis 500

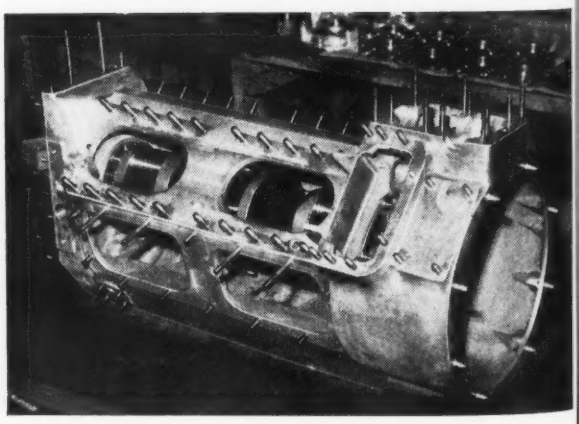
Among the cars now being groomed for the big race is the Novi Governor, which will again be driven by Ralph Hepburn, last year's lap record breaker

THE new Novi Governor, outgrowth of the car that Ralph Hepburn drove to a lap record of 134.449 mph at Indianapolis last year, is being prepared for the 500 miler next Memorial Day. Recently, while being tested at Muroc Dry Lake, this latest Novi, mounting an enclosure and fin, hit 220 mph, with Bud Winfield driving.

The property of Louis Welch, of Novi, Mich., the car was designed and built by Winfield at LaCanada, Calif. It is a competition car of advanced design with many interesting features.

Among these are a V-8 engine with twin overhead cams and three Winfield carburetors. This power plant is apparently the same as the one that drove the 1946 car and is basically the same as that used by Ralph Hepburn in the Bowes Seal-Fast Special he drove in 1941. Supercharged by centrifugal blower, mounted to the rear of the block, this engine has an inter-cooled fuel system and burns straight alcohol. With 3⅛ in. bore and 2 15/16 in. stroke, the displacement is 180 cubic inches, as it was in 1946. Top en-

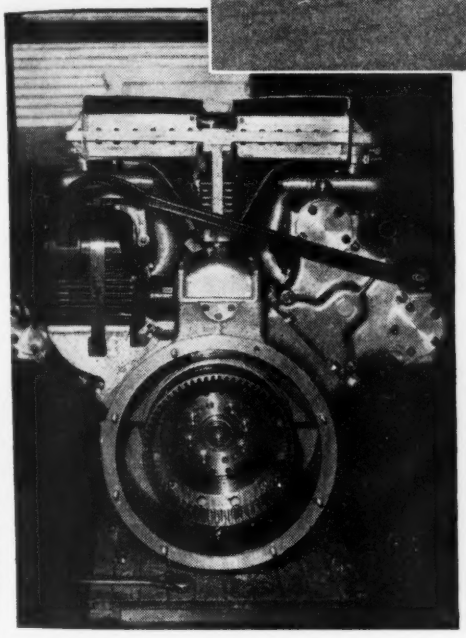
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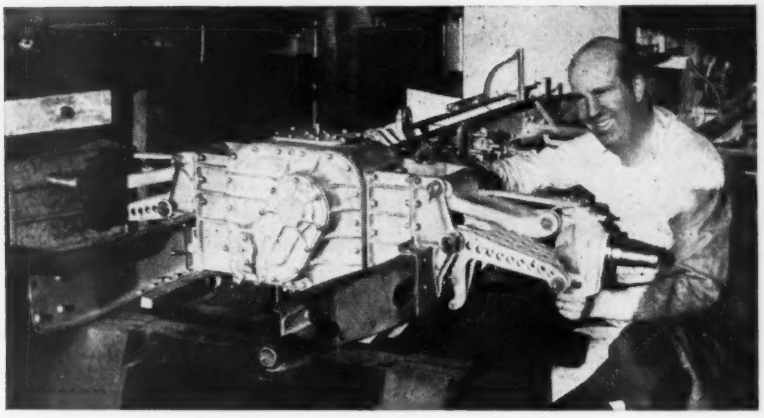
A general view of the crankcase and crankcase, with the engine blocks removed and crankshaft visible. Note the many studs.



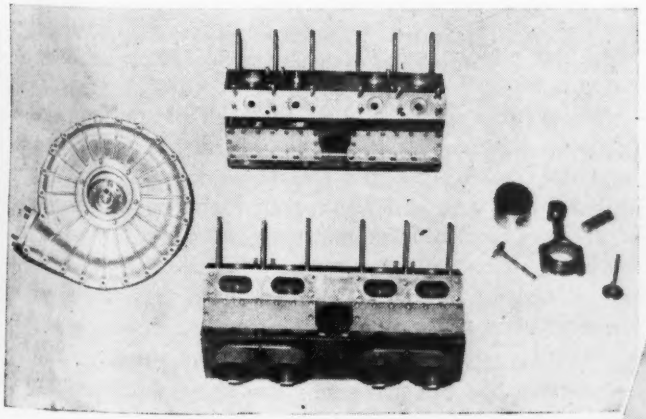
Mounting an enclosure and fin, the Novi Governor recently reached a top speed of 220 mph at Muroc Dry Lake as part of the tests it has been put through in preparation for the coming 500-miler.



A front view of the Novi's power plant, showing the flywheel, engine blocks and intercooling air channels mounted at the top.

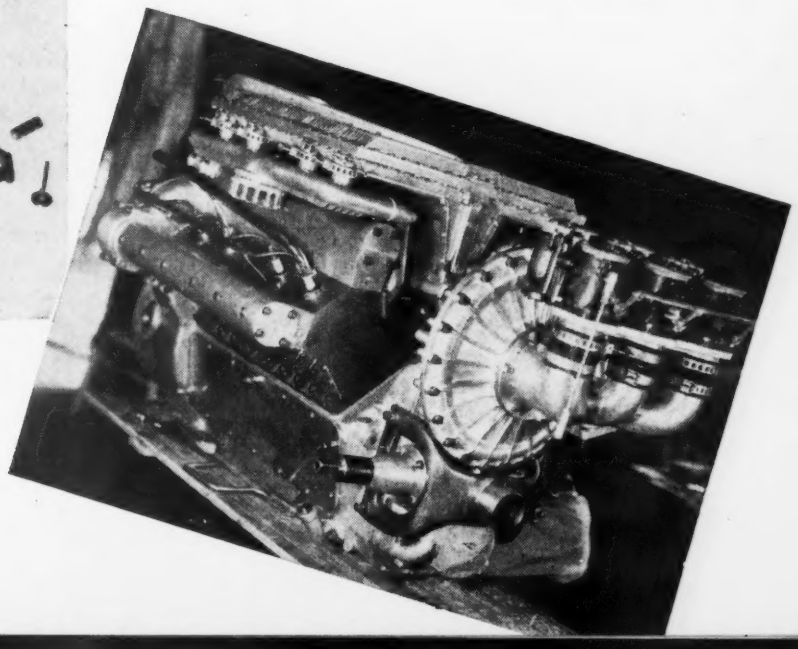


The chrome molybdenum chassis, built by Kurtis Kraft of Los Angeles. The designer and builder of the car, Bud Winfield, is holding the lightened and improved front wheel drive unit.



Left center, the supercharger; center, top and bottom, engine blocks; right center, piston pins, valves and con rods. The eight con rods cost approximately $280 apiece.

A three-quarters rear view showing the engine completely assembled. The overhead camshafts, air channels and supercharger unit are visible.





This article explains the double entry system which large shops prefer because it gives a complete and accurate record

by CHARLES M. KENYON

Bookkeeping for Small Repair Shops

MANY of the repair shop owners who now operate on a single entry bookkeeping system of the type described in previous articles are interested in a more advanced system of bookkeeping. And many shop owners who now use a more complicated system are interested in how to get useful information out of the figures at hand.

Most accountants favor a "double entry" system of bookkeeping over the "single entry" system which we presented in previous issues and the chances are that if the shop books were set up by an accountant that he used double entry. Although, as previous articles emphasized, single entry is a simpler form, double entry repays the time put into it by giving a more complete picture of the business.

Double entry bookkeeping is a logical approach to the problem of recording business transactions. It shows both what the business gave in each transaction and what it received. For example, when a repair shop buys a paint sprayer and compressor for $340, the shop loses $340 in folding money, but it gains by one good paint sprayer. If the deal was a fair one, the net worth of the shop is just exactly what it was before the transaction took place, and double entry books record exactly how this value shifted from cash in the bank to equipment. That is the theory of "double" entry bookkeeping.

The arithmetic of all kinds of bookkeeping is the same, and all simple. The aspect which throws most mechanics for a loss right at the start is a doubt about which figures go in left hand columns and which in right hand columns, or as a bookkeeper would say, which are "debited" (written in the left hand column) and which are "credited" (written in the right hand column). The rule is easy enough: Whatever the business gets is debited (left hand column); whatever the business gives is credited (right hand column). Every transaction must result in equal debits and credits. There are no exceptions at all.

The actual books which are ordinarily used in most businesses are five in number, just as in some single entry systems. In the Journal every transaction is written down in order as the deal takes place and the correct debit or credit is indicated. The Cash Ledger, the Accounts Receivable Ledger, and the Accounts Payable Ledger actually record the transactions which their titles indicate they would contain. The General Ledger contains a summary of all accounts, and some smaller divisions which do not need a whole ledger to themselves. In some shops there are more breakdowns, such as a Sales Journal, but a few minutes study of them will show how they fit into the general plan.

Let us suppose that the repair shop sold a battery for $17.35 to a customer for cash. The Journal entry would then be

Cash (debit)	17|35	
Merchandise (credit)		17|35

Or the bookkeeper might write it this way: "Cash to Merchandise, $17.35." That is also the exact wording which most bookkeepers would use if the shop owner asked them to read aloud the first entry.

No erasures should ever be made in the books, particularly in these first Journal entries. If an error is made, the wrong figure should be crossed out with a single neat line and the correct figure put above it. If the books are ever examined by a court or by other officials an erasure takes some embarrassing explanation at times but the crossed out figure clearly shows an error such as any honest man might make.

The Journal entry now stands as a record of the transaction but the process is not yet complete. The correct ledger accounts, Cash and Merchandise, must be credited or debited. This transferral is called "posting." The total of all right hand column postings will always equal the total of all left hand column postings.

(*Continued on page* 92)



Getting a car ready for the spray booth is a long grind, but it pays off in better results



PREPARATION Makes the Paint Job

by RICHARD L. REDDY

MILLIONS of cars on the road today look as though they'd been given to the scrap drive back before the war and recently returned to their owners . . . as is. Their paint work might have been done with a rag and a mixture of lard and soot. These are the cars that are finally described in the used car ads as "Good transportation," "In running condition," or even, "A little rough." They're a little rough, all right.

More and more of the owners of these cars, faced with having to hang on to the old load a while longer, are being sold on the fact that the next best thing to a new car is a new paint job and the wrinkles removed from the old one provided the job is good.

Good body refinishing necessarily comes high. Too many owners, when they get an estimate on a paint job, have an idea that all it takes is a spray gun and a can of paint. They fail to realize that a paint job is only as good as the preparation given it, that preparing a body for painting takes lots of savvy, lots of Norwegian steam, the right equipment and thorough familiarity with getting the most of that equipment.

The final quality of a paint job, then, depends almost entirely on the preparation given the body before it is handed over to the spray booth. Whether it's a folded fender, a dimpled door or a battered body shell, the paint men can't make it look like much unless the body boys have carefully and painstakingly restored the original contours. Nor is this limited to complete refinishing jobs. Every operation that involves the spray gun must begin with careful straightening and smoothing, although it concerns no more than a scraped fender.

There are three types of refinishing; recoloring, standard refinish and complete, basic refinish. The recolor job is scarcely worth the time and money put into it, and consists merely in giving the car or the panel a quick, "rag-and-spit" cleanup then spraying on a coat or two of paint. It stands up a little better than a coat of calcimine. The second type, the standard refinish, is applied over the old finish, but includes a thorough sanding, rust-removal, feather-edging, an adequate priming and two to four coats of final color. The complete basic refinishing job means stripping off all the oid paint, smoothing and straightening all

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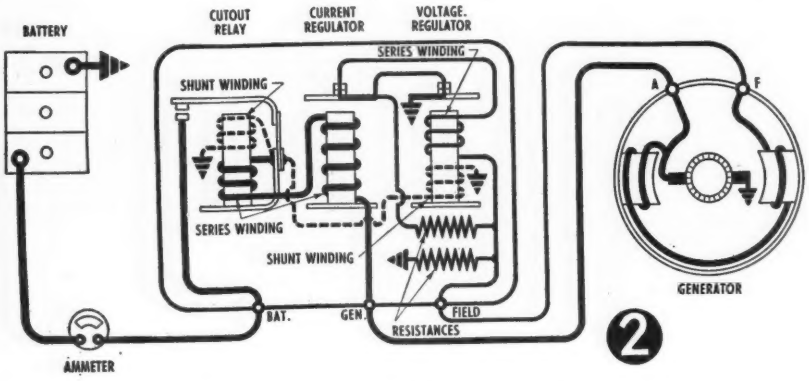
How REGULATORS

by W. H. CROUSE

IN the previous issue of MOTOR AGE we discussed the theory of generator operation, and now, before following up with the checking and adjusting story on generators, let's take a "once over lightly" on regulator theory. The reason we do this is that quite often the first step in any generator servicing job is to make sure that the generator is actually the unit that is in trouble. Sometimes a regulator that acts up will make the generator look bad. Thus, because almost all modern generators use regulators, understanding regulator operation is essential to generator service.

That little black metal box—the current and voltage regulator—which is mounted on the engine side of the fire-wall is one of the most misunderstood mechanisms on the automobile. But we need not be afraid that we cannot understand it since it is no more than three switches.

Fig. 1 shows a typical current and voltage regulator with the cover removed. Fig. 2 is a wiring diagram of the regulator. But for a moment let us ignore the complete wiring diagram and merely look at the regulator in its simplest terms. Fig. 3 is a wiring diagram of the current and voltage regulator with the windings removed. You can see that it actuallly consists of nothing more than three switches or three sets of contact points. The set to the left is that used in the cutout relay, while the two sets to the right represent the current regulator and the voltage regulator units.



Wiring circuit of a current and voltage regulator. Details of the working parts of the electrical circuit are shown below.

CUTOUT RELAY OPERATION

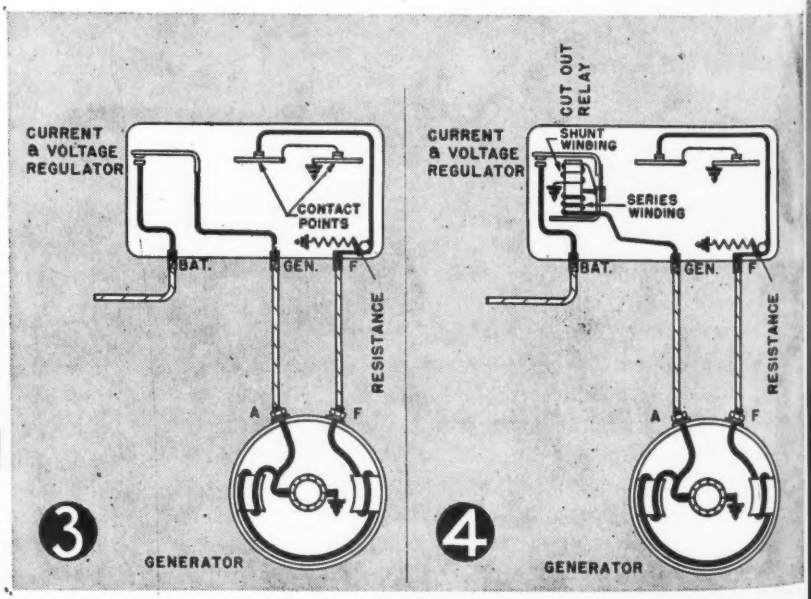
Let us investigate the action of

Brush up on the fundamentals of regulator theory and operation in this concise article by a well-known expert in the automotive electrical field



With windings removed a regulator is essentially three switches.

Adding the cutout relay series and shunt windings to the regulator.



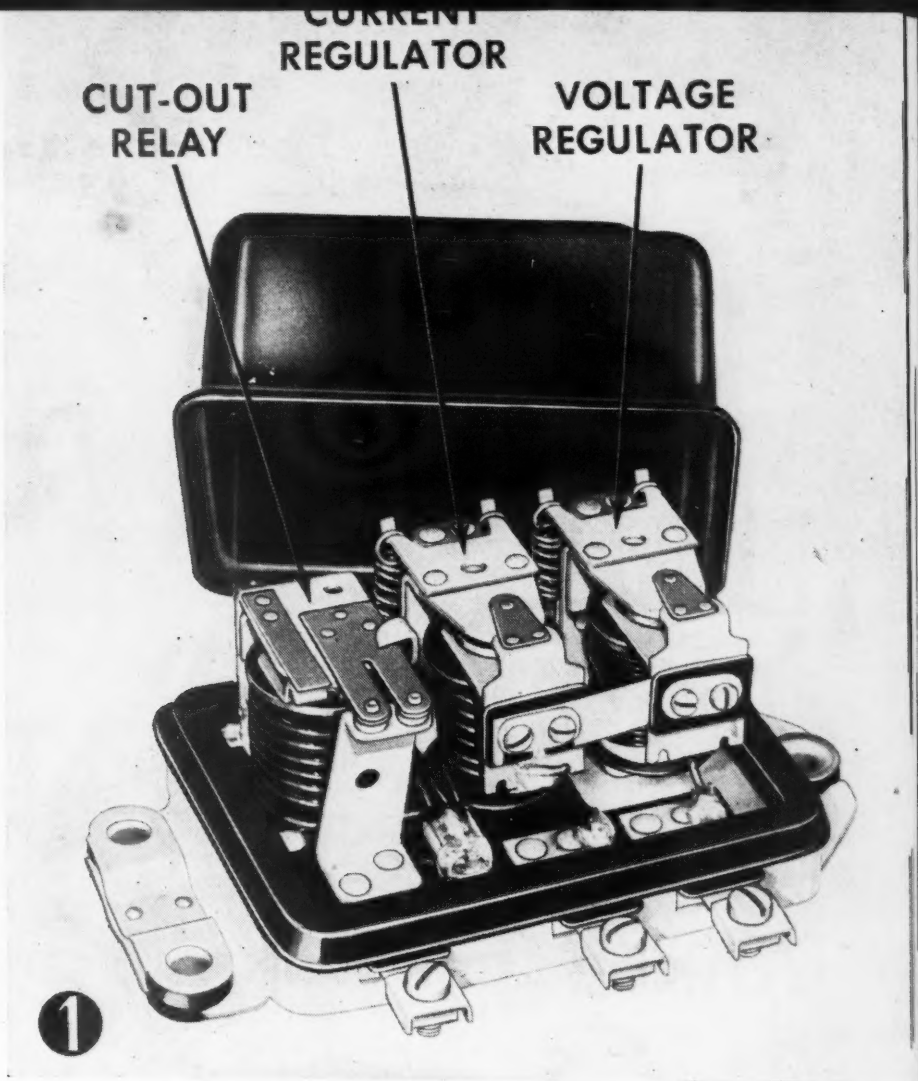
Operate

the cutout relay first inasmuch as it is a switch operated by windings just as the current and voltage regulator units are. Fig. 4 is the same as Fig. 3 except that the cutout relay windings have been added. There are two windings: a shunt winding consisting of many turns of fine wire and a series winding consisting of a few turns of relatively heavy wire. The series winding is connected into the circuit between the generator and the battery while the shunt winding is shunted or connected across the generator.

HOW RELAY CLOSES

When the generator is not operating, the cutout relay contact points are held open by the tension of a spring on the relay armature. When the generator begins to operate, its voltage builds up and this voltage is impressed on the relay shunt winding. This increasing

(*Continued on page* 95)

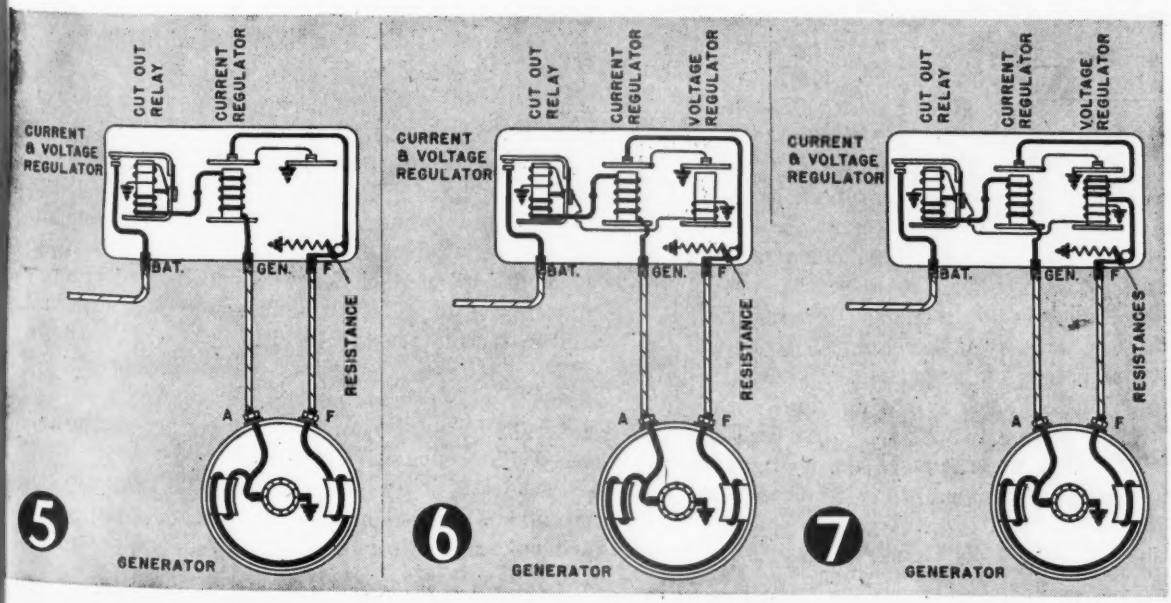


A typical current and voltage regulator presented with the cover removed and the three major units exposed.

Adding the current regulator winding to those in position.

Adding the voltage regulator shunt winding. The final stage.

The complete wiring circuit. Compare this with Fig. 2.





The Packard Super-Eight Convertible for 1948, an entirely new car in the Packard line. A 327 cu. in. engine mounted on a 120 in. wheelbase puts this new car in the high power-to-weight ratio class.

PACKARD Announces New Model

A new Packard two-door convertible that combines "flush-contour" styling with a convertible top

A NEW Super-Eight Convertible for 1948, on which conventional fenders have been superseded by an unbroken "flush-contour" body line from headlight to rear bumper, and which is powered by a larger newly-developed engine, has been introduced by the Packard Motor Car Company. As we go to press, no performance or prices have been released.

While retaining the traditional Packard front-end appearance, the new car is a complete departure from the current Packard line. It is not merely an additional body type, but an entirely new model. The body itself forms the fenders, and sweeps rearward from the front end without bumps or protrusions. The bumpers, in keeping with the car's flowing lines, reach almost from wheel-opening to wheel-opening, and are integral parts of the body. Part of the cooling air enters through the front bumper, which also serves as a section of the grille.

The chassis, like that of the smaller Packards, has a 120 in. wheelbase, but mounts the first new car powerplant to be developed by them since the war, an L-head straight eight.

The bore, 3½ in., is ¼ in. larger than the Packard Deluxe Clipper, while the 4¼-in. stroke is the same. This is in keeping with what seems to be a general trend toward "square" (equal bore and stroke) design. This gives the new convertible a swept capacity of 327 cubic inches rather than the deluxe Clipper's 282.04 cu. in., and 145 brake horsepower, as against the Clipper's 125. The compression ratio is 7 to 1. New valve design and manifold placement are claimed to improve acceleration, while improved crankcase ventilation is said to reduce sludge formation. From the point of view of servicing, the engine is "clean," with a minimum of accessories to get in the way. The alligator hood has been dropped in favor of the side-opening type.

The five-bearing crankshaft weighs 104 pounds, and is mounted in removable, precision-type bearings. The pistons are specially treated aluminum alloy, with steel struts and new, coil-spring-expanded oil control rings. There is full pressure lubrication to all main, connecting rod, camshaft and piston-pin bearings, and to the valve tappets.

The fuel system employs a dual downdraft carburetor with two intake jets, automatic choke, heat control and idling control. The twenty-gallon tank has a filling signal.

Packard has decided that the automatic transmission is not yet sufficiently developed for standard use, and this model is not so equipped. The

(*Continued on page* 112)



Queen of the recent Pineapple festival is Miss Cissy Jensen, 18 year old University of Hawaii freshman. She poses on a surfboard at famed Waikiki Beach with Diamond Head for a backdrop. Around her neck is a lei of Lehua and plumeria flowers.

MOTOR AGE PICTURE GALLERY



Johnny Matera of Bayway, N. J., one of the East's best known dirt track drivers, at the wheel of his 200 hp Hal Special. The car was built and owned by Denny Comiskey, a Garwood, N. J., police sergeant.

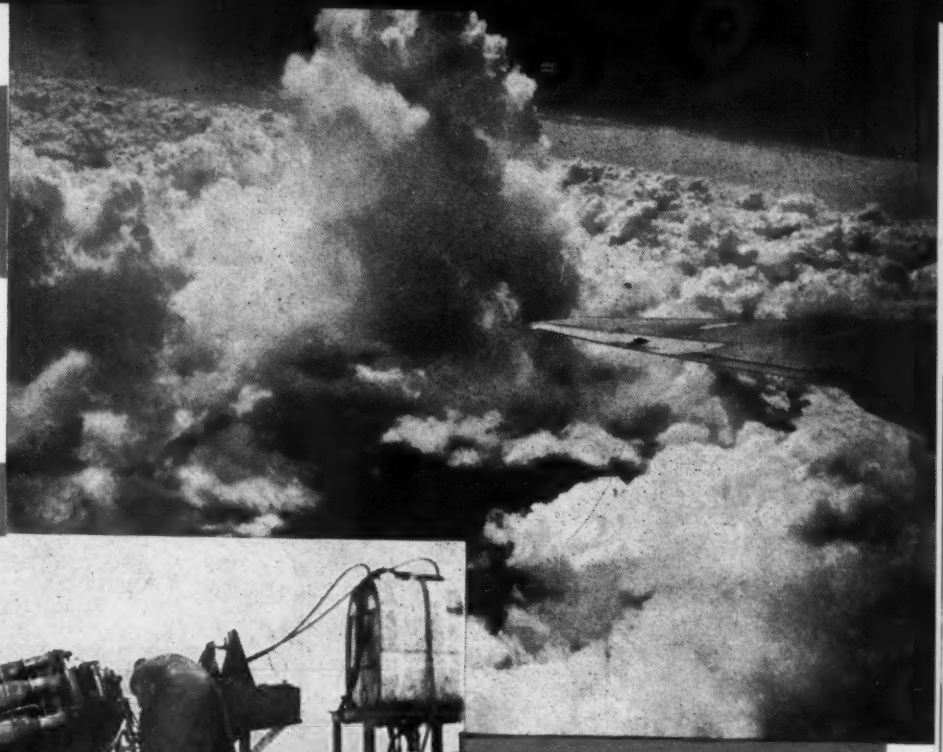


This novel little British motorcycle is reputed to be the smallest in the world. It will carry an adult rider for one mile with a filling of gas equal to that needed for two ordinary pocket-sized cigarette lighters.

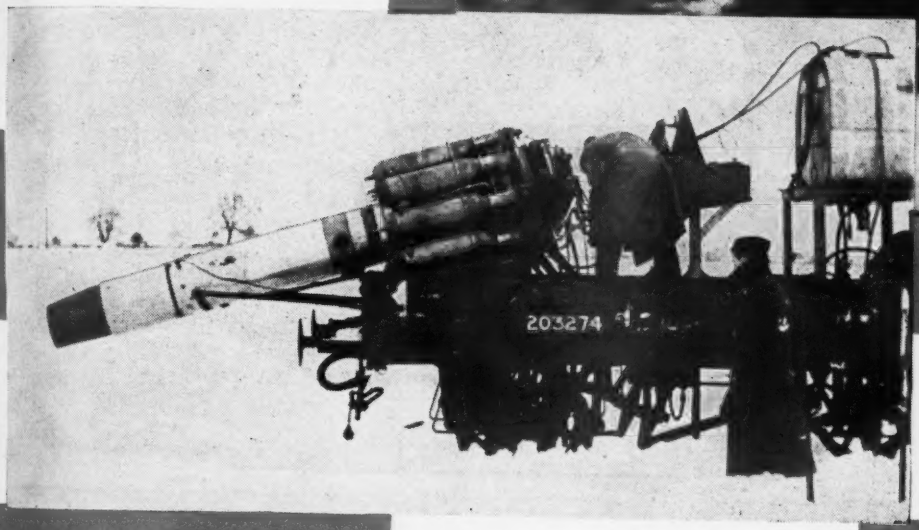


Mrs. Inez Weipel, 71 year old Australian widow, bought a tricycle because she felt lonely. "A friend of mine told me that it was a good cure for loneliness, so I thought I'd get one that was easy to push and hard to fall off," she said. "It works very well."

The Australian Council for Scientific and Industrial Research recently conducted a series of rain making experiments. Between 200 and 300 pounds of dry ice were dropped into cumulous clouds at about 25,000 feet. Rain formed a few minutes after the dry ice was released.



A wartime aircraft gas turbine engine is mounted on a railway car in tests of the adaptation of a war-designed machine in clearing railway tracks of heavy snow. Drifts up to 18 feet deep melt easily.



Larry Hightower, whose ambition is to be the first man (and probably the last) to push a wheelbarrow around the world, has covered 3000 miles. He thinks twelve years will complete this extraordinary journey.



Using a slightly oversized mallet and spike, movie actor Harold Lloyd drives a stake to symbolize the start of construction on 36 alleys for the American Bowling Congress.



FRANK THE FIXER

STORY BY J.E. FORD
DRAWN BY A.L. CASSEL























Current Passenger Car Price, Weight and Body Table

Following are two sets of car prices, at factory, as of the end of January, 1947. The list price which does not include federal taxes or handling charges is compared with the suggested delivered price at factory which includes federal taxes and handling charges where noted. All prices are for cars with standard equipment. State or local taxes, transportation and finance charges and optional equipment are extra.

BODY, MAKE AND MODEL	List Prices at Factory without Federal Taxes	Federal Taxes	Delivered Price at Factory including Federal Taxes	Shipping Weight
BUICK				
Series 40				
Sedan, 4d.	$1488	$87	$1555	3720
Sedanet, 2d.	1413	84	1497	3670
Series 50				
Sedan, 4d.	1689	98	1787	3910
Conv. Coupe	2052	117	2169	4050
Sedanet, 2d.	1612	94	1706	3795
Estate Wagon	2422	137	2559	4170
Series 70				
Sedan, 4d.	1949	111	2060	4385
Conv. Coupe	2324	131	2455	.....
Sedanet, 2d.	1857	107	1964	.....
CADILLAC*				
Series 61				
Club Coupe	1945	134	2079	4270
Tour. Sedan	2060	143	2203	4270
Series 62				
Club Coupe	2161	150	2311	4385
Conv. Coupe	2567	174	2741	4385
Tour. Sedan	2230	158	2388	4385
Series 60				
Tour. Sedan	2924	202	3126	4500
Series 75				
Tour. Sedan, 5p.	4065	275	4340	5000
Sedan, 7p.	4239	278	4517	5000
Imperial, 7p.	4422	289	4711	5000
Bus. Sedan, 9p.	3930	265	4195	5000
Bus. Imperial, 9p.	4111	277	4388	5000
CHEVROLET				
Master DeLuxe				
Town Sedan	1072	80	1152	3170
Sport Sedan	1123	82	1205	3175
Bus. Coupe	1022	76	1098	3105
Sport Coupe	1059	78	1137	3130
Special DeLuxe				
Town Sedan	1143	82	1225	3190
Sport Sedan	1194	86	1280	3225
Sta. Wagon	1604	108	1712	3465
Flt. Sedan	1222	87	1309	3240
Sport Coupe	1130	82	1212	3145
Cabriolet	1381	95	1476	3445
Aerosedan	1165	84	1249	3165
CHRYSLER				
Royal-Six				
Coupe, 3p.	1431	79	1510	3373
Club Coupe	1551	85	1636	3443
Lux. Brghm.	1526	84	1610	3458
Sedan, 4d., 6p.	1561	85	1646	3523
Sedan, 4d., 8p.	1943	106	2049	3977
Limousine	2063	113	2176	4022
Windsor-Six				
Coupe, 3p.	1481	81	1562	3383
Club Coupe	1601	88	1689	3448
Conv. Coupe	1861	101	1962	3693
Lux. Brghm.	1591	87	1678	3468
Sedan, 4d.	1611	88	1699	3528
Sedan, 8p.	1993	109	2102	3977
Limousine	2113	115	2228	4052
Twn. & Ctry.				
Sedan, 4d.	2366	128	2494	3917
Saratoga 8				
Coupe, 3p.	1753	96	1849	3817
Club Coupe	1848	101	1949	3892
Lux. Brghm.	1838	100	1938	.....
Sedan, 4d., 6p.	1863	101	1964	3972
New Yorker 8				
Coupe, 3p.	1853	101	1954	3837
Club Coupe	1948	106	2054	3897
Conv. Coupe	2193	119	2312	4132
Lux. Brghm.	1938	105	2043	3932
Sedan, 4d., 6p.	1963	107	2070	3987
Twn. & Ctry. 8				
Sedan, 4d.	2718	148	2866	.....
Conv. Coupe	2743	146	2889	4332
Crown Imp. 8				
Limousine, 8p.	3875	204	4079	4814
CROSLEY*				
Sedan, 2d.	849	56	905	1115
Convertible	949	62	1011	1110
DE SOTO				
DeLuxe				
Coupe, 3p.	1331	73	1404	3302
Club Coupe	1451	80	1531	3392
Sedan, 2d.	1426	78	1504	3397
Sedan, 4d., 6p.	1461	80	1541	3427
Custom				
Club Coupe	1501	82	1583	3378
Conv. Coupe	1761	96	1857	3618
Brougham	1491	82	1573	3423
Sedan, 4d., 6p.	1511	83	1594	3433
Sedan, 4d., 7p.	1893	104	1997	3837
Limousine	2013	110	2123	.....
Suburban	2193	120	2313	4012
DODGE				
DeLuxe				
Coupe	$1229	$68	$1297	3146
Sedan, 2d.	1299	72	1371	3236
Sedan, 4d.	1339	74	1413	3256
Custom				
Club Coupe	1384	76	1460	3241
Conv. Coupe	1649	90	1739	3461
Sedan, 4d.	1389	77	1466	3281
Twn. Sedan	1444	80	1524	3331
Sedan, 4d., 7p.	1743	96	1839	3757
FORD†				
DeLuxe 6				
Coupe	1036	74	1110	3033
Tudor	1070	76	1146	3183
Fordor	1154	80	1234	3213
Super DeL. 6				
Coupe	1125	78	1203	3033
Tudor	1135	79	1214	3183
Fordor	1195	82	1277	3233
Sed. Coupe	1180	81	1261	3133
Stat. Wagon	1468	97	1565	3487
DeLuxe V8				
Coupe	1088	76	1162	3066
Tudor	1120	78	1198	3216
Fordor	1204	83	1287	3246
Super DeL. V8				
Coupe	1175	81	1256	3066
Tudor	1220	83	1303	3216
Fordor	1279	88	1365	3266
Sedan Coupe	1253	85	1338	3166
Conv. Club Cpe.	1436	95	1531	3266
Sportsman	1921	120	2041	3366
Stat. Wagon	1517	100	1617	3520
FRAZER				
Sedan, 4d.	2143	111	2254	3365
HUDSON				
Super Six 171				
Sedan, 4d.	1491	83	1574	3110
Brougham	1449	81	1530	3055
Coupe, 3p.	1420	80	1500	2975
Club Coupe	1489	83	1572	3040
Conv. Brougham	1799	99	1898	3220
Com. Six 172				
Sedan, 4d.	1630	91	1721	3175
Club Coupe	1625	90	1715	3090
Super 8, 173				
Sedan, 4d.	1598	88	1686	3260
Club Coupe	1595	88	1683	3210
Com. Eight 174				
Sedan, 4d.	1702	94	1796	3330
Club Coupe	1689	93	1782	3260
Conv. Brghm.	1965	107	2072	3435
KAISER				
Sedan, 4d.	1958	105	2063	3305
LINCOLN†				
Sedan, 4d.	2185	152	2337	4015
Cus. Sedan, 4d.	2327	159	2486	4015
Club Coupe	2167	151	2318	3915
Cus. Club Cpe.	2309	158	2467	3915
Conv. Coupe	2704	179	2883	4245
Cont. Coupe	4125	267	4392	4125
Cont. Cabriolet	4205	271	4476	4135
MERCURY†				
Sedan, 2d.	1404	97	1501	3268
Twn. Sedan, 4d.	1462	100	1562	3298
Sedan Coupe	1449	99	1548	3218
Club. Conv.	1654	110	1764	3368
Sportsman	2128	135	2263	3435
Stat. Wagon	1676	112	1788	3571
NASH*				
600 Series				
Sedan, 4d., Trk.	1270	94	1364	2786
Brougham, 2d.	1221	94	1315	2731
Sedan, 4d.	1226	94	1320	2826
Ambassador				
Sedan, 4d., Trk.	1521	110	1631	3387
Brougham, 2d.	1463	110	1573	3312
Sedan, 4d.	1479	110	1589	3412
Suburban	1917	132	2049	3522
OLDSMOBILE*				
Series 66-6				
Stat. Wagon	2175	144	2319	3770
Conv. Coupe	1627	115	1742	3611
Club Coupe	1308	99	1407	3616
Club Sedan	1334	99	1433	3323
Sedan, 4d.	1369	102	1471	3358
Series 76-6				
Club Sedan, Std.	1392	105	1497	3495
Club Sedan, DeL.	1500	110	1610	3515
Sedan, 4d., Std.	1459	109	1568	3523
Sedan, 4d., DeL.	1565	113	1678	3590
OLDSMOBILE* (Continued)				
Series 68-8				
Stat. Wagon	$2228	$147	$2375	3900
Conv. Coupe	1680	118	1798	3741
Club Coupe	1361	102	1463	3446
Club Sedan	1387	103	1490	3453
Sedan, 4d.	1422	105	1527	3486
Series 78-8				
Club Sedan, Std.	1445	109	1554	3612
Club Sedan, DeL.	1554	112	1666	3650
Sedan, 4d., Std.	1512	112	1624	3638
Sedan, 4d., DeL.	1618	115	1733	3705
Series 98-8				
Conv. Coupe	2040	141	2181	4049
Club Sedan	1642	120	1762	3715
Sedan, 4d.	1690	122	1812	3795
PACKARD				
Clipper Six				
Tour. Sedan	1658	87	1745	3495
Club Sedan	1610	85	1695	3450
DeL. & Clipper				
Tour. Sedan	1850	97	1947	3670
Club Sedan	1800	95	1895	3625
Super 8 Clipper				
Tour. Sedan	2277	114	2391	3995
Club Sedan	2230	112	2342	3950
Cus. Sup. 8 Clip.				
Tour. Sedan	3119	155	3274	4060
Club Sedan	2992	148	3140	4000
Limousine	4307	214	4521	4900
Sedan, 7p.	4151	206	4357	4870
PLYMOUTH				
DeLuxe				
Coupe, 3p.	1089	63	1152	2977
Club Coupe	1159	67	1226	3037
Sedan, 2d.	1124	65	1189	3047
Sedan, 4d.	1164	67	1231	3082
Spec. DeLuxe				
Coupe, 3p.	1159	66	1225	2982
Club Coupe	1234	70	1304	3057
Conv. Coupe	1439	81	1520	3282
Sedan, 2d.	1199	69	1268	3092
Sedan, 4d.	1239	71	1310	3107
Stat. Wagon	1539	87	1626	3402
PONTIAC*				
Streamliner 6				
Sedan Coupe	1359	104	1463	3405
Sedan, 4d.	1407	107	1514	3460
Stat. Wagon	1992	138	2130	.....
DeL. Sta. Wagon	2066	141	2207	3725
Torpedo 6				
Bus. Coupe	1217	96	1313	.....
Sport Coupe	1261	98	1359	3300
Sedan Coupe	1305	100	1405	3305
Sedan, 2d.	1275	99	1374	3305
Sedan, 4d.	1331	102	1433	3330
Conv. Sed. Cpe.	1595	116	1711	3570
Streamliner 8				
Sedan Coupe	1404	107	1511	3460
Sedan, 4d.	1452	109	1561	3520
Stat. Wagon	2037	140	2177	.....
DeL. Sta. Wagon	2111	143	2254	3795
Torpedo 8				
Bus. Coupe	1262	98	1360	.....
Sport Coupe	1306	100	1406	3365
Sedan Coupe	1350	102	1452	3375
Conv. Sed. Cpe.	1640	118	1758	3645
Sedan, 2d.	1320	101	1421	3375
Sedan, 4d.	1376	104	1480	3415
STUDEBAKER*				
Champion DeL.				
Sedan, 4d.	1292	.....	1388	2735
Sedan, 2d.	1262	.....	1356	2685
Coupe, 5p.	1287	.....	1383	2670
Coupe, 3p.	1197	.....	1288	2600
Champ. Reg. DeL.				
Sedan, 4d.	1362	.....	1462	2760
Sedan, 2d.	1332	.....	1430	2710
Coupe, 5p.	1357	.....	1456	2690
Coupe, 3p.	1267	.....	1362	2620
Commander DeL.				
Sedan, 4d.	1544	.....	1657	3265
Sedan, 2d.	1514	.....	1626	3230
Coupe, 5p.	1539	.....	1652	3210
Coupe, 3p.	1449	.....	1557	3140
Comm. Reg. DeL.				
Sedan, 4d.	1659	.....	1778	3280
Sedan, 2d.	1629	.....	1747	3245
Coupe, 5p.	1654	.....	1773	3225
Coupe, 3p.	1564	.....	1678	3155
WILLYS				
Station Wagon	1495	.....	.....	.....

*—Federal Excise taxes and Delivered Price at Factory include dealer handling charges. †—Preparation and conditioning charges and Federal taxes.

Indianapolis Race Purse Will Be Largest in History of the 500-Mile Event

An all-time record purse for the annual 500-mile race was predicted today by Wilbur Shaw, president and general manager of the Indianapolis Motor Speedway Corporation, following a preliminary report by the Indianapolis Citizens' Speedway Committee in charge of subscriptions to the lap prize fund.

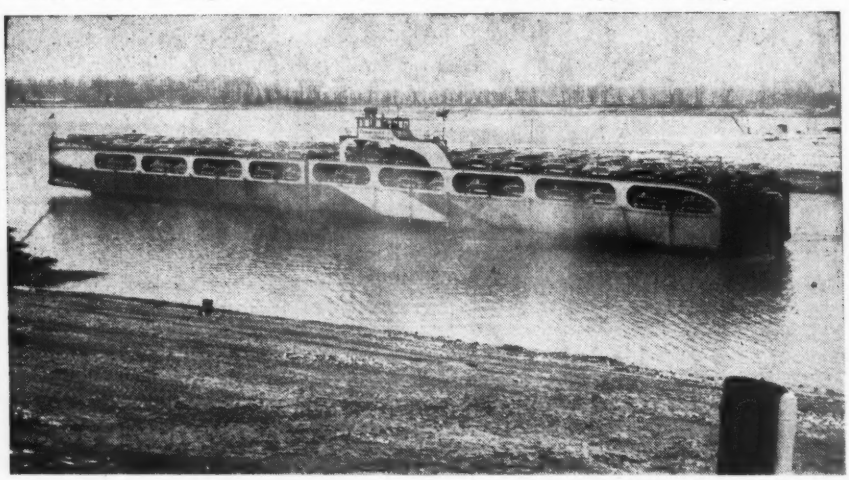
According to an announcement by Sam Mueller, secretary of the committee headed by Charles C. Babcock and Russel S. Williams, early acceptances are far ahead of last year's pace. Sixty of the 200 awards which assure the race leader of $100 at the completion of each lap already have been subscribed and the committee expects to reach its goal of $20,000 at an earlier date than ever before. Interest in the race is running very high.

Thirty-one subscriptions have been obtained from Indianapolis firms and the other 29 from individuals and industries in other communities spread over the United States from Texas to New England.

Last year's record purse, including lap prize and accessory awards, totalled $115,450 although the cash at stake when the cars roared across the starting line amounted to only $101,950. The additional $13,500 was included in the payoff on the day after the race when the Speedway management voluntarily increased its share of the purse from $61,500 to $75,000. The entry blank for this year's race at the famous two-and-a-half-mile oval on May 30 guarantees Speedway prizes of $75,000 for the first time in history as evidence of the management's good faith in an effort to make the prize list very attractive.

The R. M. Hollingshead Corporation of Camden, N. J., heads the first lap price subscription list with $800 for eight laps. The Studebaker Corporation has subscribed for three laps and five other concerns have taken two each.

"Steamboat roun' de bend!" may now be bringing cars instead of cotton. The Commercial Clipper, first three deck automobile barge on the Mississippi, carries 425 new cars to the Beale Street Landing. When another section is added the Clipper will carry 600 cars.



AMA Warns Against WAA Hydraulic Fluid

Motorists were warned today by the Automobile Manufacturers Association not to use petroleum-base hydraulic and recoil fluid, now being sold as surplus by the War Assets Administration, in the brake systems of their cars.

Use of the fluid in automotive braking systems will cause serious deterioration of rubber parts, according to automotive engineers.

Engineers recommend use of non-petroleum base fluids only in motor vehicles. Petroleum-base fluid should not be used in servicing vehicles.

The danger has been pointed out to the War Assets Administration which in turn has agreed to caution wholesale purchasers of the fluid. Another 8,000,000 gallons of the surplus fluid are up for sale.

Thermoid Raises Wages Without Labor Pressure

The Thermoid Company recently announced a wage increase of 10 cents per hour for all factory workers at its main plant in Trenton. Announcement of this surprise action was made by Mr. Fred Schluter, Thermoid President, directly to employees throughout the plant. In a general letter to all factory workers he said:

"The 18½ cents increase that we gave last spring plus this 10 cents per hour increase plus the profit-sharing distribution which is now averaging over 6 cents per hour makes an increase of over 34 cents per hour on the 40-hour schedule during the last year."

Thermoid's action in giving this increase immediately after the

(*Continued on page* 120)

Tom O. Duggan

On March 21 in Santa Ana, California, Tom O. Duggan died suddenly. Last fall he had bought a half interest in Hockaday and Phillips, Inc., and had returned to the coast to take up his duties as vice-president-secretary of the company. It was on the coast too that he first became well known in



maintenance work, as a carburetor engineer for Chanslor and Lyon Co. in 1914. After a short period as superintendent of the motor car assembly department of Van Hamm-Young Co. of Honolulu, he was called into the Army where he did notable pioneer work in establishing flying fields and in supervising the rebuilding of aircraft engines.

After the war he rejoined Chanslor and Lyon and by 1920 he had become sales manager of the Los Angeles branch. In 1927 he became merchandising service director of the National Standard Parts Association. In this capacity he made countless friends in the replacement parts field in all sections of

(*Continued on page* 134)

Chevrolet Is Considering Two Important Changes

Gossip circulating in Detroit mentions two items concerning developments reported due to appear on the Chevrolet sometime in the future. One is that the car will use brake linings cemented to the shoe instead of being attached with rivets. The other deals with an automatic transmission to be offered as optional equipment. Details are scanty and entirely without confirmation, but the reports certainly are not out of the realm of possibility. Dodge has been using cemented brake lining on its lighter trucks for several months, so that development is not without precedent. And with the G.M. Hydra-matic a proved product, G.M. has had plenty of experience in the field of automatic transmissions, so it should not have too much trouble developing something suitable for Chevrolet.

Another Ford Cut And Two New Models

A $20 cut in the price of the Ford deluxe six-cylinder, three-passenger business coupe, and its reinstatement in the Ford line, was announced recently by J. R. Davis, Ford Motor Company vice-president and director of sales and advertising.

Mr. Davis said: "This price cut, together with reductions announced Jan. 15 on other models, gives Ford the lowest priced coupe and tudor sedan in its field. This is in keeping with Ford's traditional policy of providing more and better cars at the lowest possible cost to the buyer."

"These new spring-model cars will soon be displayed by Ford dealers throughout the country."

Changes include relocation of parking lights, a new medallion in place of the hood ornament, and

(*Continued on page* 136)

General Motors Automobile Production Shows Great Increase over Previous Month

Production of passenger cars and trucks by General Motors in the United States and Canada in February totaled 158,028 compared with 123,152 in January of this year.

Despite the increase in output this month over January, February production was still well below the peak postwar production rate set in December, 1946, when 174,489 cars and trucks were turned out. Inability to meet the December rate was due primarily to a serious shortage of sheet steel.

Of the February production, 111,433 were passenger cars and 46,595 were commercial vehicles.

The following table shows the breakdown of production figures for the two months through February:

	1947	1946
Chevrolet		
Passenger	89,131	3
Truck	59,917	....
Pontiac	31,439	....
Oldsmobile	28,326	....
Buick	37,196	....
Cadillac	9,638	....
GMC Truck & Coach		
Trucks	11,404	....
Coaches	615	....
G. M. of Canada		
Passenger	9,729	1
Truck	4,768	16
Total	281,180	20



CLEARING HOUSE

FOR SERVICEMEN'S QUERIES

Bill Toboldt, Editor, Motor Age

Exhaust Fumes in the Car

I have a customer who has a 1941 Buick that gets exhaust fumes in the car so strong that you have to open the windows. It does it mostly when you are driving with the wind or have a side wind and then only when you have been driving at a high rate of speed and slow down quickly and then go on to speed up again.

First all the exhaust gaskets were all replaced and exhaust pipe, muffler and tail pipe checked. Then the tail pipe was plugged to try to find a leak and the complete exhaust system gone over with a stethoscope and all the motor crankcase breathers cleaned and the motor tuned up then I put an extension on the tail pipe and everything I can think of appears to be in perfect condition. Nothing has done any good and the body appears to be perfectly tight.

Any information you can give me on this will be greatly appreciated.—Oliver E. Posey, 405 Beard St., Frankfort, Ind.

After carefully studying the letter in which you describe the trouble you are experiencing with a 1941 Buick, it would seem to me the only thing you have not done in an effort to overcome this trouble is to install a new set of rings. Exhaust fumes, such as you describe, result from excessive blow-by and that, in turn, is caused by either clogged breather pipes or worn rings or cylinders. I would suggest you check the pistons, rings and cylinders and quite probably you will find it necessary to recondition the cylinders and install oversize pistons and rings.

Burned Points on '35 Dodge

I have a 1935 Dodge which burns the points, especially the stationary or screw. I have put in new coil, condenser, tightened all wire connections, cleaned battery cables. These will go about a week then we have to file them to start.

The car is run very little—not more than ten miles a day. Any help you can give will be appreciated. — White's Garage, North Haverhill, N. H.

On the trouble you are experiencing with distributor points on the 1935 Dodge I would suggest trying different condensers to see if that does not overcome your trouble.

I appreciate, of course, that you have installed one new condenser but it is not unusual to find condensers which are defective even though they have not been used before. If that does not overcome your trouble, I would suggest a recheck of your generator voltage and if that is excessive it would result, of course, in burned ignition points. In some cases it has been found necessary to install a modern two-brush generator and a voltage regulator in order to overcome this trouble.

Radiator Trouble

I am having trouble with a 1937 Master Chevrolet car. The water pump throws the water out the overflow pipe. I have completely overhauled the motor, new water pump, new hose, cleaned the radiator, checked the timing. It has a 1939 radiator on it, the top hose sets up straighter is all the difference. Wish you could give me some suggestions on it.—Hardy Brothers Garage, 2009 Orange Ave., Fresno, Calif.

The most usual cause of the trouble you are experiencing with a 1937 Chevrolet is a clogged radiator. I appreciate, of course, that you have cleaned this radiator but sometimes it is very difficult to remove all the accumulated scale and rust and as a consequence the water is still forced out of the overflow.

There is also a possibility that you have a burned head gasket resulting in the exhaust gases blowing into the water jacket. This results in very rapid loss of water and quite possibly you will find this the cause of your trouble.

I would suggest you fill the radiator to the top so that you can see the water and then after the engine has reached operating temperature, gun the engine several times and if you have a leaking cylinder head gasket wou will see bubbles come up through the water in the radiator filler pipe and you might also find water coming out of the exhaust pipe. However, you

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FOR SERVICEMEN'S QUERIES

want to be sure that normal condensation is not mistaken for water from the cooling system and this can be taken care of by being sure the engine is at operating temperature.

Not Enough Speed From New Engine

I have a 1939 Standard Ford, two-door. With the standard motor that was in it, it would run 95 miles an hour.

When the motor had 120,000 miles on it, I put in a new motor. The new motor was a 100 H.P., truck motor. My Ford has an overdrive on it. I thought that would give it more speed but it would run about 75 miles per hour. I decided to overhaul the 85 Standard motor. I bored it out, put 3 3/16 in. pistons in it. The same size the Mercury has. I can't get over 80 miles per hour out of it. I have changed distributors, carburetor and plugs. With a motor of that type, I think it should run 95 miles per hour.

I checked compression—it has 120 lb. It does not cut out. The coil and fuel pump is O.K. I have 12½ degree advanced distributor on it. I was wondering if the pistons might be out of balance with the crankshaft.—Merle Sparkman's Garage, Crawford St., Clarksville, Ark.

I have studied your letter relating your experiences with your 1939 Ford with considerable interest, and I am of the opinion that your original engine was most unusual. In general most Ford 85 H.P. jobs will do approximately 85 miles an hour. Certainly most of them will not approach the speed you attained with your first engine.

A great deal of the variation in performance of Ford engines is undoubtedly in the distributor not having the points correctly synchronized.

If the pistons were out of balance, you would undoubtedly be getting considerable vibration. If your new engine is equipped with four ring pistons, it will take from five to six thousand miles before it is broken in so as to get maximum performance and fuel economy. The three-ring pistons will give maximum performance after only one or two thousand miles but in general will wear out more quickly than the jobs fitted with four rings.

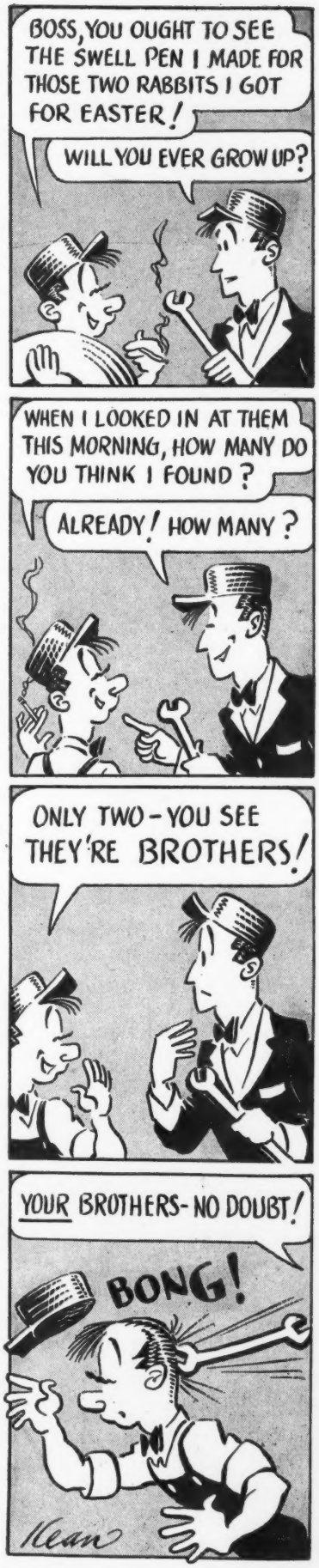
Short Blocks and Complete Engines

Can you furnish me with the following information about Chevrolet motors and short block assemblies? Are Chevrolet 1940-46 short block assemblies and complete motors interchangeable? If so, what parts are necessary to make the change? Also, would like to know what parts are necessary to replace 1940-46 216 regular engine or short block assembly with 1940-46 235 heavy duty engine.—L. G. McCormick, Auto Service & Electric Corp., 204-6 N. Bridge St., Bedford, Va.

The difference between a short block assembly and a complete motor, as its name implies, is complete, whereas a short block consists of the cylinder block only with pistons, crankshaft, etc. By adding the necessary parts a short block

(*Continued on page* 127)

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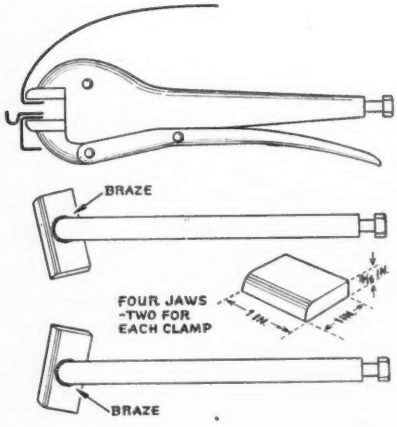
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Surer than the races, steadier than hitting the jackpot. The faster you write 'em, the richer you get. We need 'em bad if they're good. So grab your pencil and spike yourself a fin. Send along your idea—write it or draw it, anyway that we can understand it—some short cut to make a job easier or faster, some special tool you can't buy, some kink of your own. Of course, we won't accept any printed by any other publication.

Body Clamps For Drip Moulding

A set of quick-acting body clamps to clamp the turret top at the drip moulding when it has been pulled away or when a new top is being replaced, can be made by attaching specially constructed jaws to a standard pair of vise grip pliers.

These clamps are made from two of the small size vise grip pliers now on the market, to provide a



right and a left-hand pair of clamps. The old jaws are ground off and the new ones are brazed on at an angle, as shown in the sketch. A right and left-hand set of clamps will enable the body man to get into corners and behind gusset plates.—*W. Klausler, 5609 11th Ave., South, Minneapolis, Minn.*

Tool for Removing Radiator Hose

I have made a handy, inexpensive tool for removing radiator hoses from cars. I bent the end of a 10-inch heavy screw driver to a 35 or 40 degree angle, about 1¼ inches from the tip. With this tool I hook the end of the hose and free it from the pipe and pull it off without hacking at it or cutting my hands. I also found that an 18-inch screw driver makes a good similar tool for reaching lower, hard-to-reach hoses.—*A. Larson, Central Garage, 105 So. LaSalle St., Aurora, Ill.*

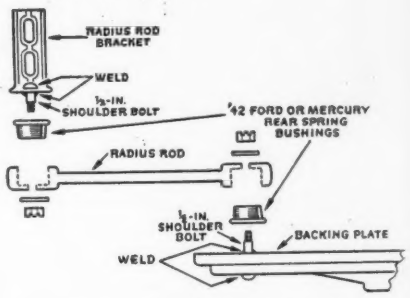
Repair for Older Type Chevrolet Knee Action

We found that the radius rods on the older type Chevrolet cars could be repaired without too much time or expense.

First of all, we purchased four of the large type rear spring rubber bushings (and shoulder bolts) for the late 1942 Ford or Mercury. We were able to use the bolts in making the repair.

After removing the radius rod, we removed the anchor or rod bracket that secures the radius rod to the backing plate and replaced it with one of the ½ in. shoulder bolts, welding it heavily on the shoe side of the plate and lightly on the other side. We then removed the bracket that holds the radius rod to the bottom of the coil spring unit, and cut off the threaded portion that originally secured the radius rod. This we replaced with another of the ½ in. shoulder bolts, welding it securely in place.

Next we drilled ½ in. holes in the radius arm to take the bolts now welded to the backing plate and bracket. Then we inserted the Ford rubber bushings in the radius rod bushing holes and assembled the rods to the backing plate and



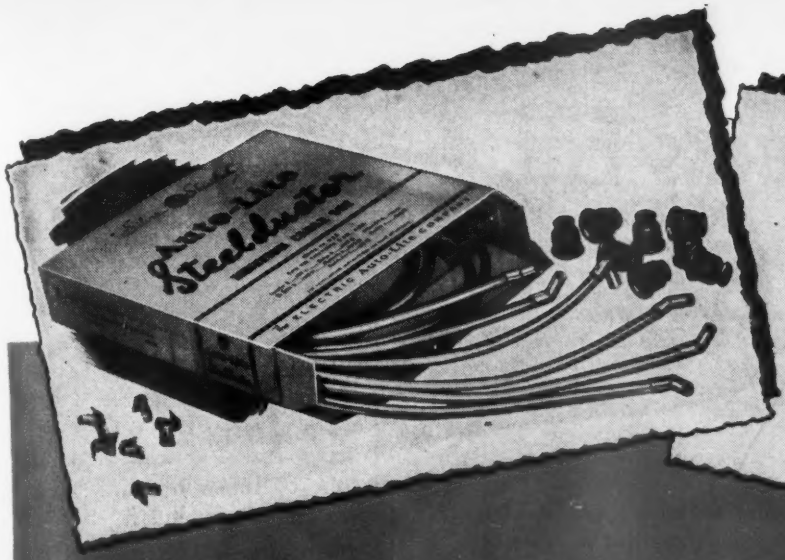
bracket with washers and nuts. It was necessary to cut off about ½ of the nut and protruding bolt for clearance. As part of this job, the center bushing of the backing plate should be replaced.

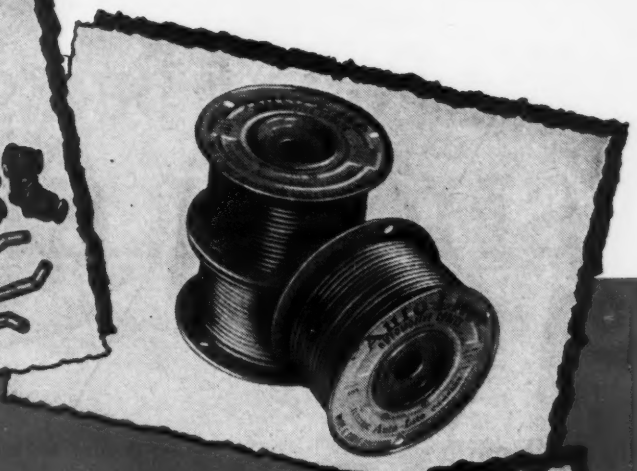
This repair has been very successful, and a number of cars in this district are giving good service because of it.—*Mason I. Barclay, Route No. 1, Rogersville, Ala.*

Shop-Made Rubber Chain Tightener

Chain tighteners can be made with little effort by using sections of an old inner tube and cross chain end hooks. The jaws of the hooks are spread slightly to make them slip over the chain links with ease. —*Victor H. Lamoy, Upper Jay, New York.*

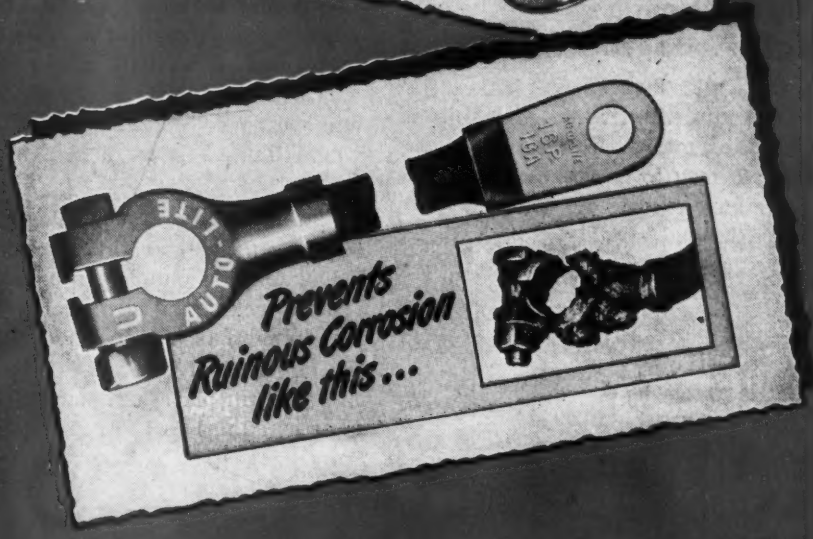
(*Continued on page* 62)





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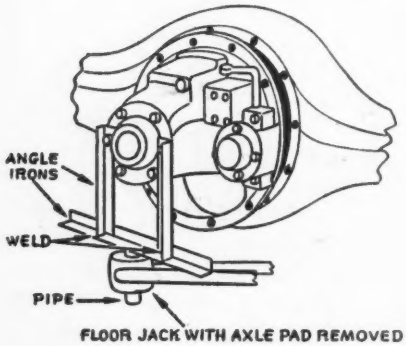
We Pay 5 Bucks For SHOP KINKS

(*Continued from page* 60)

Jig for Handling Eaton 2-Speed Axle

On Eaton 2-speed rear axles, we have found that, when replacing a chuck assembly, it is far two heavy for two men to handle safely.

We have made a jig that fits into the axle pad socket on our shop roller jack. Three pieces of heavy



FLOOR JACK WITH AXLE PAD REMOVED

angle iron are welded together as in the illustration and drilled so they will bolt to the pinion oil seal flange. A piece of pipe that will fit the jack axle pad socket is then welded to the cross piece angle iron. The chuck can then be placed in the banjo housing easily and safely. —*Donald H. Mann, 27 Central St., Auburn, Mass.*

Repair on Chrysler Clutch Fork Release Rod

Here is a kink I have used to obtain proper clutch pedal adjustment and clearance where the clutch linkage is worn and replacement parts are not on hand for Chrysler cars.

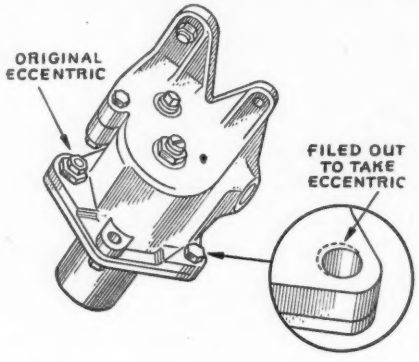
Remove the clutch release fork rod, lock nut and adjusting nut assembly. Saw the rod in two near the center at a 45 deg. angle, turn one end half-way over, placing the two points together, and weld the pieces by puddling in the vee which is formed. This will increase the length of the rod to obtain safe and proper clutch adjustment where linkage is worn but is still safe to use.

Another way to lengthen the rod when the end that works in the clutch the clutch torque shaft pivot bracket is worn, is to saw the crook end off flush with the side of the rod and weld a ⅜ in. brake pin in place, butting the pin at right angles to the rod—*Reeves Donnell, Donnell's Country Shop, Canyon Texas.*

Steering Gear Repair on '29 to '35 Chevrolets

I have discovered a new, inexpensive method of improving loose steering gears on Chevrolets, from 1929 to 1935.

The usual procedure is to install new worm shaft, sector shaft, bushings and so forth, in order to obtain a high spot when adjusting.



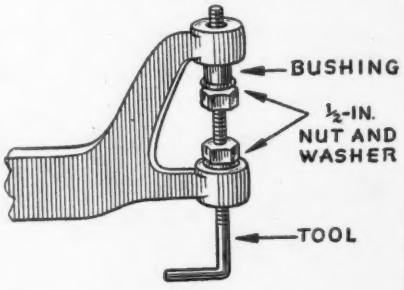
These parts have not always been available, so I have worked out the following method:

Using the original parts, I filed, with a small, rat-tail file, the pivot hole in the sector shaft housing, enough to insert an eccentric bolt of the same type as is used in the regular back lash adjustment hole. This gave me an added adjustment. —*Douglas H. Stiehm, Rollingstone, Minn.*

Tool for Installing King-pin Bushings

I have made a tool to install king-pin bushings on cars having conventional front ends.

I use a piece of ½ in. steel rod, about 14 in. long. I thread one end of this for about 5 in., and bend 5



in. of the other end to a right angle. After the old bushing have been driven out, the tool is inserted with two ½ in. nuts and a washer. The nuts are close together at the start. Then, as the lower nut is screwed down the bushing is forced up into place.—*Clarence G. Mills, Square Deal Garage, West Norwood, N. J.*

Removing Ford Rear Hub Grease Retainer

I don't know if there is a tool made to take the grease retainer out of a Ford rear hub, but here is one I made that sure does the job.

I took the rear end of an old 5/16-inch (Model T brake rod with clevis made on, and cut it to a 15-inch length. I then riveted two pieces of strap iron ¼ x ⅝ x 2 inch in the clevis, and mounted a strong piece of spring wire between them to hold them apart. To use this tool I put it through the axle shaft hole and pull it through until the two fingers snap in the bearing, then drive the bearing and retainer out.—*Earl Bell, 1011 North 13th St., St. Joseph, Mo.*

The TRUCUT will operate at a profit... ...in any shop

★

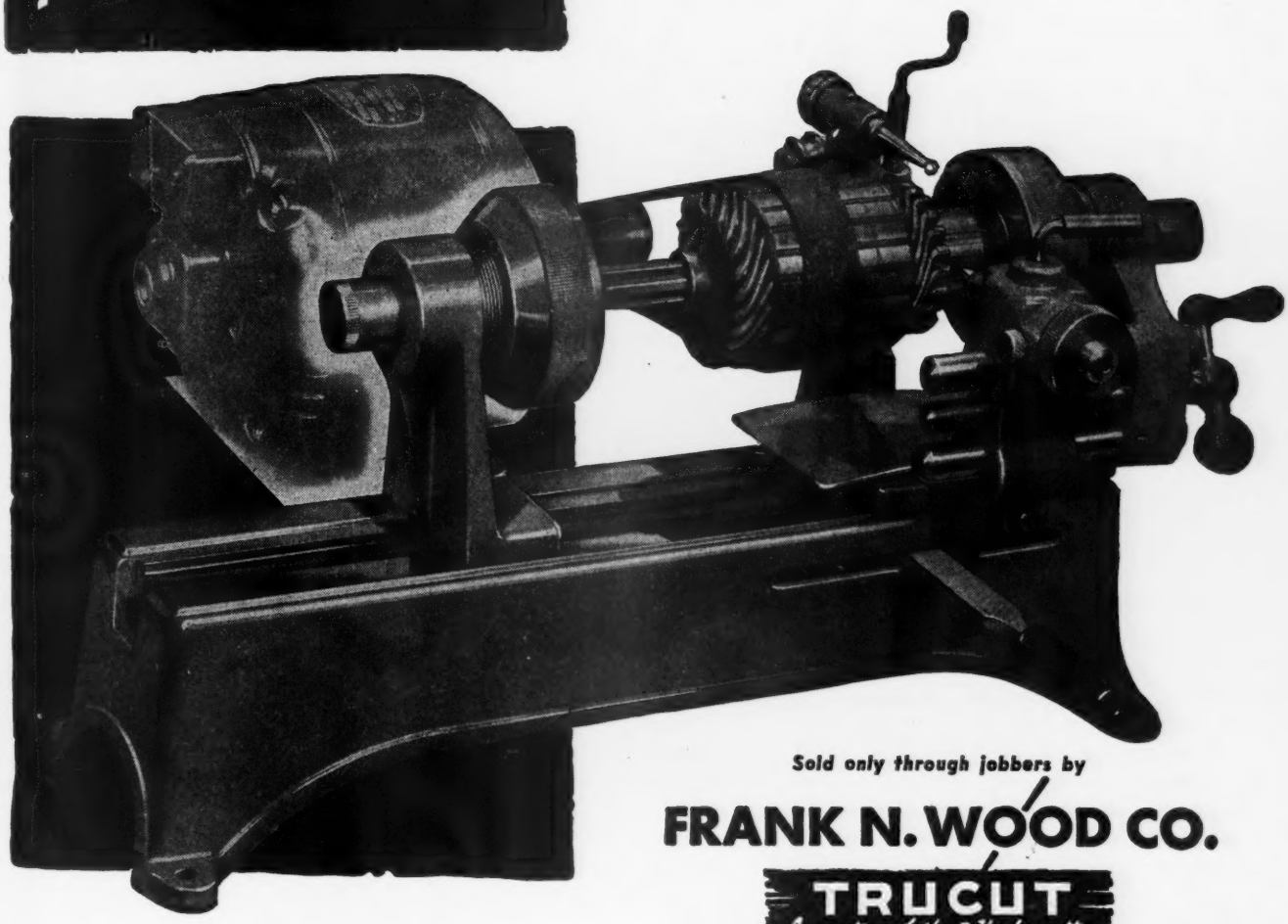
WHEN you order your Armature Lathe and Undercutter, be sure to specify TRUCUT, the original lathe built especially for starter and generator work.

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New PRODUCTS

Neco Valve Clearance Indexer for Fords

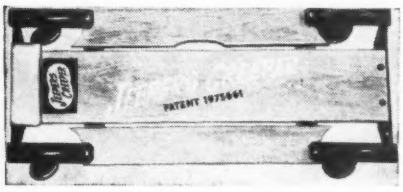
To be mounted on the timing gear cover in the conventional manner of the Ford V-8 distributor, the Neco valve clearance indexer fits all V-8 Fords, from 1932 through the current models.

After mounting the Neco unit, the drum is rotated by hand until the tang registers with the slot in the cam shaft in its proper position to insure correct timing relation. The line on the spider casting is always in a vertical or top position, and any line on the drum registering with the spider line will indicate the exact lowest portion of the cam heel and signify whether it is an exhaust or intake valve and the number of the cylinder. This will give the mechanic the exact degree of valve opening and closing of each valve. It is made by the Neco Products Company, of New Castle, Indiana.

New Mechanic's Creeper

The "Jeepers Creeper", a new mechanic's creeper specially designed to roll easily over rough floor, gravel surfaces, wires and other obstacles, is announced by the R & L Manufacturing Co., Toledo, Ohio.

The creeper is mounted on patented Ralco Rollers, 3 in. in diam-



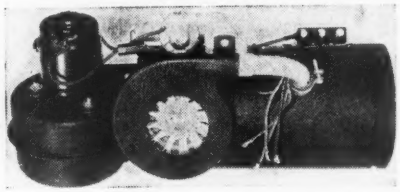
eter, as compared with the ordinary caster's 1½ in. diameter. By mounting this roller at an angle of less than 45 degrees, the maker claims that the "roll-over" of a wheel twice its size is obtained.

The overall height of the bed is 2½ in. The unit is made of oak with a 1 in. Airfoam cushion, covered with plastic that is unaffected by water, acids, gas or oil.

Under-the-Hood Heater By South Wind

The South Wind Division of Stewart-Warner, at Indianapolis, has made available a car heater that combines instant heat with automatic thermostat control and fresh air ventilation. The unit operates independently of the engine and is housed under the hood.

According to Stewart-Warner, this heater has enough heat capacity to heat two full sized rooms. They claim that, in actual operation, the difference between the temperature on the floor of the



front seat and the temperature on the floor of the back seat does not exceed two degrees, Fahrenheit. Ventilating air is completely changed every few minutes.

Black Underbody Gun for Immediate Delivery

The Black Manufacturing Company, of 1614 West Baltimore St., Baltimore 23, manufacturers of Black Arrow "Hollow Air" paint spray equipment, announces that it is now shipping to Black Arrow jobbers its new underbody gun, to be known as the "Muff-Gun". It is designed for the application of all types of underbody materials.

The maker states that the "Muff-



Gun" sprays about 10% faster on pump hook-ups, because obstructions in fluid passages have been reduced to a minimum, and that a smoother flow of material is obtained because of the gun's improved nozzle and valve design. It may be used with either a pump or pressure hook-up.

Tow-Master Hydraulic Unit in Four Models

The Tow-Master Corporation, 1111 North Clark Street, Chicago, has brought out a range of tow bars that incorporate an hydraulic unit to absorb towing shocks.

Designed to enable one man to handle two cars without assistance, the Tow-Master is fitted with an

(*Continued on page* 66)



THIS COMBINATION makes it easy to clean engines and small parts quickly

The toughest degreasing job—the toughest cleaning job on small metal parts—is easy when you have HO-ZOF and DIP-ZOF at hand! These time and labor saving WHIZ products do the job *chemically*—do a better job quicker! Use HO-ZOF for degreasing floors, engines, engine parts, tools, machinery, work pits, grease racks . . . use DIP-ZOF for cleaning carburetors, fuel pumps, small metal parts. No special equipment is required, and DIP-ZOF is available with or without a wire dipping basket.

Let HO-ZOF and DIP-ZOF save *your* time and labor—order from your jobber today! *R. M. Hollingshead Corporation, Camden, N. J., Toronto, Canada. Warehouses in Dallas, San Francisco and Chicago.*

Whiz

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LEADER IN MAINTENANCE CHEMICALS

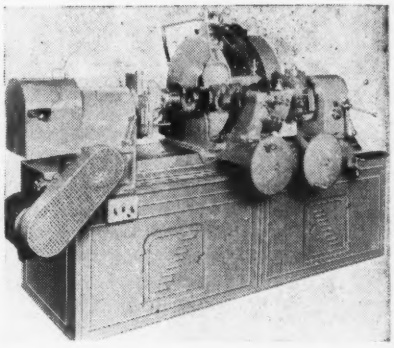


New PRODUCTS

hydraulic shock absorber to assure smooth towing action and increased safety. The jaws are adjustable to take any standard bumper, and are free to rotate about the point of attachment to give additional towing flexibility. The unit is made of seamless alloy, electrically welded, and incorporates a universal ball joint bearing. It is available either as a one-jaw hitch for light trailers and cars, a two-jaw hitch for medium loads, a three-jaw unit for general utility work, and a heavy-duty four-jaw unit for complete job coverage. Prices, with discount, range from $15.75 to $66.75.

Lempco Announces Several Products

Lempco Products, Inc., of Dunham Road, Bedford, Ohio, have introduced a new crankshaft regrinder, Model NKG, for which additional precision, simplicity of operation, speed and sturdiness of construction are claimed.



Lempco has also brought out a new clutch plate grinder, equipped with special jigs and fixtures for locating and clamping the parts in work. This unit turns, then grinds a clutch plate in one continuous operation.

A catalog and application chart for reamers has also been added to the Lempco line. It is a comprehensive publication that includes reamer and pin data for a wide range of engines.

Lincoln Flush Master Crankcase Cleaner

Lincoln Lubricating Systems, Inc., of 1924 Broadway, New York City, is now producing an air-operated crankcase cleaner, called the Flush Master, which has but two moving parts and one air connection.

It is claimed by the manufacturer that the Flush Master can be operated by an inexperienced operator without difficulty, and that it cleans all parts of the crankcase and lower motor by means of a continuous flushing action that prevents settling of deposits while draining. The unit requires but 20 inches of floor space. The price of the Flush Master is $177.50.



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Cable Address "BORINTCO"

Repair Prices . . . . . (*Continued from page* 37)

the transmission was noisy, and to shift without clashing gears required certain skills which not all drivers could learn. But the transmission was virtually trouble free. It usually lasted the life of the vehicle without any attention other than periodic lubrication. Since that day many manufacturers have adopted automatic or semi-automatic transmissoins which simplify driving. Should they require servicing, however, the charges must be a great deal higher than those for their predecessors. To overhaul the simple spur gear type unit of over a decade ago would take only about five hours. On today's cars, according to the factory, it requires up to eleven hours to overhaul an automatic transmission. Naturally, this varies somewhat with the type of unit, but it is an indication of what car owners and fleet service managers will be up against when their vehicle's transmission requires servicing.

Another maintenance job which tends to increase service costs is maintenance of transmission linkage. On cars with a shift lever extending up through the floor boards this service cost was virtually nothing. On the cars of today, with the shift lever mounted under the steering wheel it is frequently necessary to adjust the linkage and to replace bushings and grommets. This requires from one to three hours, depending on the design. It is a job which was not necessary at all 15 years ago, but it is not an unusual job today.

Straightening and replacing radiator grilles and fenders—those jobs which come under the general head of appearance reconditioning are also much higher on today's cars than heretofore. First of all, the cars of the previous decade did not have grilles in front of the radiator. Naturally, any damage to that part automatically increases the maintenance costs of today's cars as compared to older models. Today's skirted fenders are also more expensive than the simpler designs used formerly.

On certain makes of current cars the design of the rear fender is such that its replacement at cur-

(*Continued on page* 70)



SMOOTH RUNNING IS IN THE PACKAGE, TOO

There's a world of difference between *still-fit* and *operating fit* in an automotive ball bearing. Holding run-out at a minimum to maintain the right running clearances is the problem. Here's a true measure of ball bearing precision . . . in manufacture and operation both.

At Federal, inner and outer races of *every* ball bearing are ground concentric with each other to prevent run-out. The bore is cylindrical, not tapered or bellmouthed, and the sides of the rings are held parallel to each other and the ball track. No Federal Bearing is either too tight or too loose.

Add to this, the ball track ground to a chatter-free-finish and just the right radius, plus balls uniformly spherical within .000025" and not varying in diameter more than .00005" in any bearing, and you have the precision ingredients for smooth running and long life.

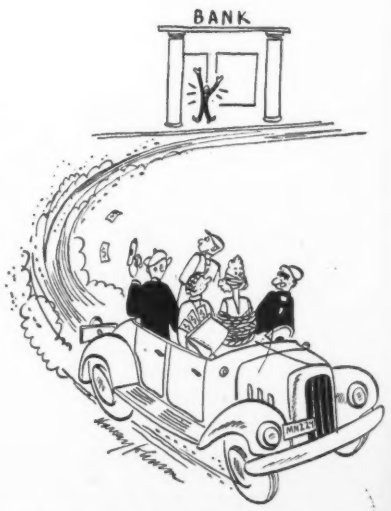
The Federal Ball Bearing line is *complete*, in every range and size to meet *any* automotive requirement. Now is a good time to get acquainted with this original equipment ball bearing line. Get in touch with the N.A.P.A. jobber nearest to you.

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FEDERAL BALL BEARINGS

ONE OF AMERICA'S LEADING BALL BEARING MANUFACTURERS



"Be careful with that cashier. I'd hate to have my wife find loose hair pins in my car."



What's wrong with being a "yes" man?

If it's a case of saying, "Yes . . . we can do the job," there's nothing wrong with being a "yes" man.

And there's one way to be sure of being that kind of "yes" man. That is to use MoPar Service Packages for repair and replacement jobs on cars and trucks manufactured by Chrysler Corporation divisions.

MoPar Service Packages give you in one handy package the *right* parts and *all* the parts you need for a specific repair job—for water pumps, universal joints, brakes and the like. And they're factory engineered and inspected for accurate fit and high quality.

That means faster, easier work for you. And it means long, dependable performance for your customers' cars and trucks.

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You can get MoPar Service Packages and individual parts for Plymouth, Dodge, De Soto or Chrysler cars, and Dodge "*Job-Rated*" Trucks from dealers for these vehicles.

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DODGE "*Job-Rated*" TRUCKS

Repair Prices . . . . . (Continued from page 68)

rent hourly rates costs about $100. For a rear fender that's a lot of money, but it is necessary to remove upholstery and cut the body panel as the fender is no longer bolted in place but is welded to the body well up on the rear quarter panel. Two hours was all that conventional job required.

There has also been a great increase in the difficulty in removing the oil pan. On older cars, all that was necessary in the past was to remove a series of cap screws and the pan could be lowered, permitting inspection of engine bearings and so forth. More recently, and due primarily to the placement of engines over the front suspension, it has become necessary to raise the engine several inches above the frame before the pan could be removed. And on one current make the oil pan cannot be removed until after the complete engine has been removed. To remove and replace an oil pan on one of the older cars required about one hour, to remove and replace the engine from the chassis takes four to five hours.

These points will probably not be considered by owners who purchase a new car every year. But to that growing army that keeps a car for longer periods and to the cost-conscious fleet operator, such points will receive careful consideration.

Certainly fleet operators would prefer their light trucks and the company cars so designed that maintenance costs would be a minimum. The same applies to the car owner who drives his car greater distances than average and who normally expects to have some major repair jobs performed.

One important result of these more complicated designs which are reflected in increased operating costs will be to seriously depreciate trade-in value, or the price of the car when it reaches the used car lot. The reason for this is that purchasers of used cars, in most instances, do their own repairing and when looking for a car will definitely favor those vehicles which can be most easily repaired.

Used car owners' desires are important to the car factories for these buyers tend to shun cars which are difficult to repair. Therefore the value of that car on the used car market will be very low. In turn, this loss in demand will be reflected in the amount allowed the original owner and will tend to make him consider some other make of car which can be repaired more easily and consequently more cheaply.

That car factories had given some consideration to this situation is indicated by the "economy" models which some of them offered before the war. For the most part, these models were fitted with carburetors having smaller jets, and conventional springing instead of independent suspension was used at the front. These cars were well received, but with the further increases in maintenance time which is evident on current models, still further consideration at the factory is warranted.

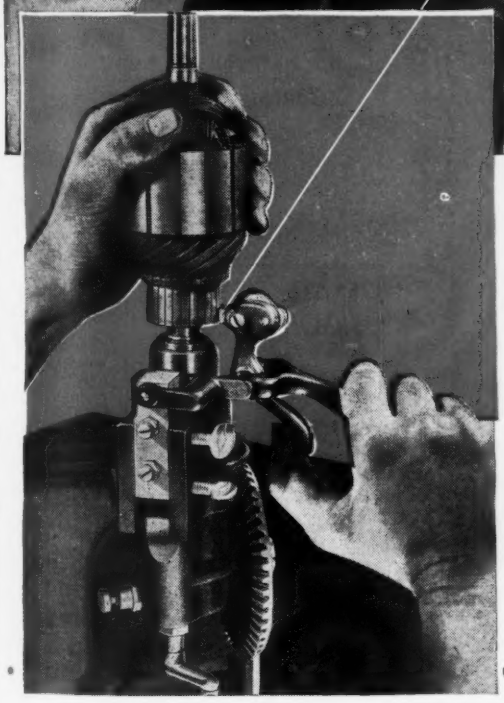


Snap-on Armature Reconditioning Tool does both

1 TURNS DOWN ARMATURE

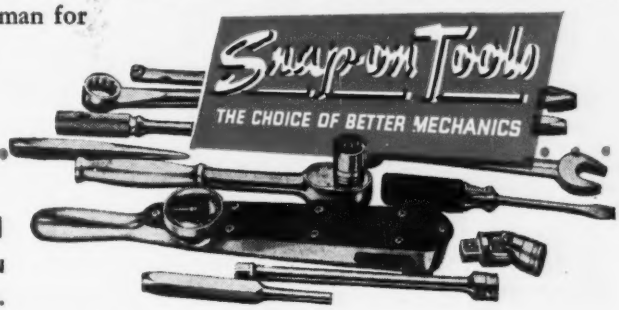
2 UNDERCUTS THE MICA





From start to finish, Snap-on Armature Reconditioning Tools are engineered to do an accurate turning and undercutting job. This unit requires no motor . . . no special centerless chuck. Simply lock it in a vise, insert armature shaft, and it's set to do an exact job, quickly, and with important savings in time and in capital investment, because it's faster to use than an ordinary lathe. The depth of the cut can be controlled to the finest shaving . . . the downward lead is fully automatic.

Undercutting the mica is just as simple . . . and when you finish the job by touching up the commutator with fine sand paper, the operation is completed to the entire satisfaction of even the most critical. Ask the Snap-on man for full details.



SNAP-ON TOOLS CORPORATION

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International Division: Kenosha, Wisconsin, U. S. A.

Pop O'Neill . . . . . (*Continued from page* 41)

Larry grunted. "Is that all?" he said. "Now get the lead out. Or we won't be able to grab a stool at the wagon.

On the way to the lunch car, Tommy kept frowning.

"If you got a pain like that," said Larry, "maybe you oughtn't to eat."

"I'm all right," said Tommy. "I was only wondering how that oil ever got on the clutch."

"Some lug at a fillin' station got careless with his grease gun, I guess."

"But it isn't grease. It's oil."

"You're spoilin' my lunch hour," said Larry. "Let's worry about things like that when we get back to the shop."

When they returned, Pop O'Neill was studying the clutch plate as it lay on a bench. Larry chose to ignore him. "Better run around to the jobber's," he told Tommy airily, "and get him to give you a new plate."

"Just a minute, Tommy," said Pop. Then he swung around to face Larry. "How'd the oil get on this clutch?" he asked.

"Who knows?" said Larry. "Some grease monkey probably spilled it when he was lubricatin' the crate."

"You mean you don't *know?*"

"Look, Pop," said Larry patiently. "I'm busy. I got a dozen jobs in here, and I got just so long to work on any of 'em. This Furness egg wants his grabbin' clutch fixed and I'm doin' it for him."

"Hmm," said Pop, pulling at his ear. "We done this job a month ago and now it's bounced. Do you want that to happen again?"

"Why should it?"

"Well, if you wasn't so clever, you'd take a good look at the job and find out."

"And what do you think I'd see?" asked Larry.

"For one thing, you'd find out that a Chrysler has a fluid flywheel."

Larry snorted. "You don't say so?"

"And naturally," went on Pop,

(*Continued on page* 74)

DOUBLE YOUR PROFITS with this NEW TIRE SALESMAN



BE PROFIT-WISE! Use the Char-Lynn Tire Spreader to boost new tire sales. This super-salesman quickly, easily shows customers the *real* condition of their old tires and the *need* for new ones. Tire shops, service stations, garages all over the country are discovering how the Char-Lynn Spreader builds tire business.



How to operate the CHAR-LYNN TIRE SPREADER

Hang tire on wall bracket. Insert spreader. Give handle quarter turn. Spreader arms shoot open instantly, spread tire 11". Flood light in bracket exposes cuts, etc. Spreader attaches to regular air hose; takes no floor space in shop.

With tire spread open, hooded light reveals cuts, breaks, bruises.

RETAIL PRICE $24.85

Complete with wall bracket, rollers and light socket.

SEE YOUR JOBBER or write direct for descriptive bulletin.

THE CHAR-LYNN COMPANY

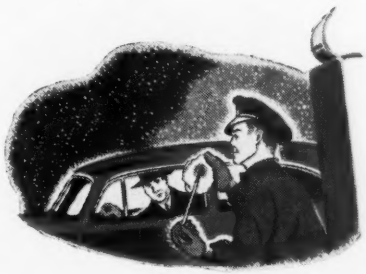
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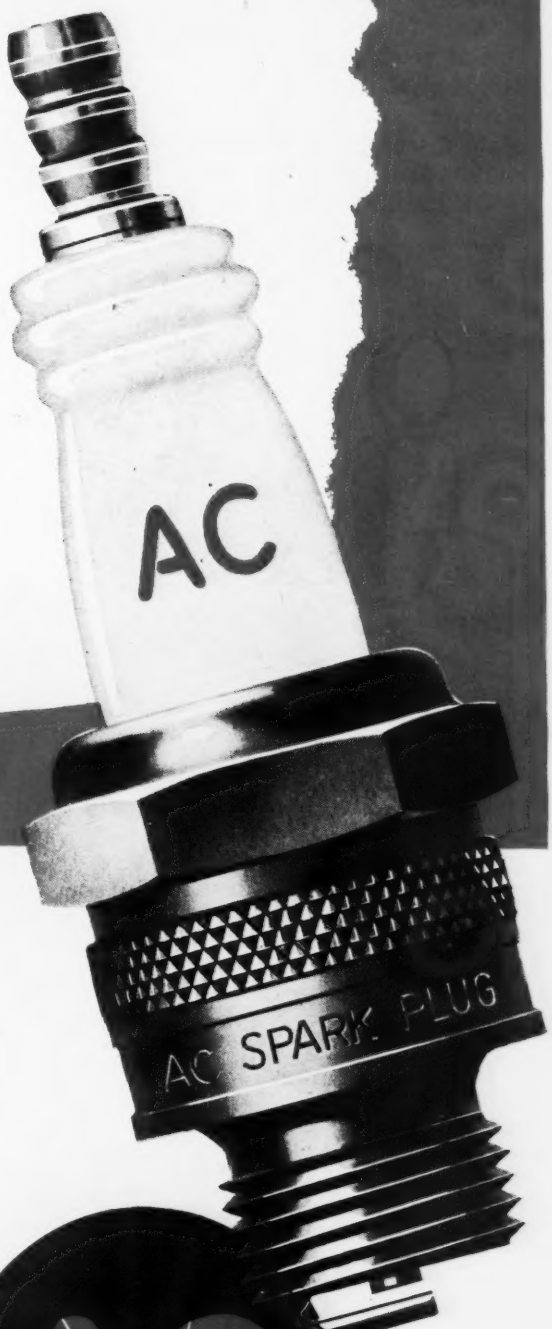


"Of course there are still a few details in this mailing machine to iron out."

CHECK THE HEAT RANGE OF ALL PLUGS

When Checking Oil





Here *is* an opportunity! Better gas, longer mileages, and normal driving speeds call for a "cooler" type of improved AC Spark Plugs. Plugs of a Heat Range that did a job in the days of lower octane gas and slower driving are too "hot" today. They are likely to split, blister, misfire, and cause preignition.

There are millions of these "wrong Heat Range" plugs still in use. Plenty are in your neighborhood. GET 'EM OUT! *You'll sell new plugs!*

Check the Heat Range of *all* plugs on every car, truck, bus, and tractor that comes in for *any* kind of service. Check it against the AC Specification Chart—*and be sure.*

ALWAYS CHECK HEAT RANGE

- ★ When CHECKING OIL
- ★ When CHANGING OIL FILTERS
- ★ When RINSING AIR CLEANERS
- ★ When CLEANING FUEL SYSTEMS
- ★ When CRISS-CROSSING TIRES
- ★ On every BRAKE JOB
- ★ When CHANGING FAN BELTS
- ★ When you give a WASH
- ★ When you CHANGE OIL
- ★ When you LUBRICATE
- ★ When you SERVICE A BATTERY
- ★ When you TUNE UP and REPAIR
- ★ When CHECKING ANTI-FREEZE

AC

SPARK PLUGS

AC SPARK PLUG DIVISION—GENERAL MOTORS CORPORATION

Pop O'Neill . . . . . (*Continued from page 72*)

ignoring the sarcasm, "you'd find the fluid flywheel has fluid in it."

"Get a load of this, Tommy," said Larry. "It's sensational."

"And furthermore," continued Pop, if you looked in your MOTOR AGE Manual "you'd see that there's a bellows seal on the clutch side of the flywheel to keep the oil from leakin' out on the clutch plate."

"Oh," said Larry.

"And in this case you'd know that the seal was not seating properly."

Larry turned to Tommy. "Better get a new seal, too," he said.

"You know, Larry," said Pop. "Sometimes you remind me of a hound dog we used to have around the farm when I was a boy. He never could pick up a trail himself, but when the other dogs found one he'd yelp louder than any of the others."

"So now I can't pick up a scent!" said Larry.

"You pick up some easy pennies. And they come outa my pocket. There ain't no money in doin' jobs twice. Why couldn't you thought about the seal when this Chrysler was in the first time?"

"I was too busy, I guess."

"All you had to do was examine the parts close. You might even have been able to tell what the trouble was from the kind of oil you seen on the clutch plate, and speaking about oil, the latest dope from the Chrysler factory is that you should use S.A.E. 10W oil in their Simplimatic Vacumatic and Hydraulic transmissions."

"I never seen nothin' about it," said Larry.

"You seen the last factory bulletin when it come in, didn't you?"

"Yeah."

"But you didn't see the piece about transmission oil?"

Larry shook his head.

"Well, the kind they're recommendin' now is S.A.E. 10W." Pop looked at his watch. "You wanta be more careful in your readin'," he said. "Or you might end up like a dope I knew once. He thought he was buyin' a ticket for Canton, Ohio, but he didn't read it, and woke up in Canton, China."

"That wouldn't make me sore," said Larry. "Sometimes I think I'd rather be in China than around here."

"That," said Pop, as he turned away, "makes it unanimous."



Yes sir, when a product does the outstanding job in motors that SI-EN-TIF-IK Motor Reconditioner does, the news is bound to get around. SI-EN-TIF-IK has a fine reputation for its work in cars, trucks, diesels and tractors all over the country. Everyone is talking about SI-EN-TIF-IK's new approach to the problem of carbon, sludge and motor varnish—about the speed and ease with which it eliminates these troubles—about the way it gives *old* motors new life, new power, new smoothness—about the safe and gentle way it breaks in *new* motors! There's a long profit margin and steady repeats that means good business for you—when *you* talk about SI-EN-TIF-IK.

DISTRIBUTORS: Some territories are still open for this rapidly expanding line—including Motor Reconditioner, Penetrating Oil, Brake Fluid, Metal Polish, "Fire Power", "Dynemix" and others. Write for additional information.



SI-EN-TIF-IK Quality products are sold on a money-back guarantee

SI-EN-TIF-IK PRODUCTS CO., INC.

2301 So. LaSalle Street • Chicago 16, Ill.



"You can check everything except the horn. That's the only thing that doesn't make any noise."

Exide ...means business

A PROMISE FULFILLED



ANNOUNCING THE NEW EXIDE BATTERIES

The NEW Exide Batteries are the fulfillment of a promise . . made by Exide to the car owners of America . . to create a new automotive battery that would combine Exide engineering and manufacturing skill with the priceless knowledge gained from war-time experience.

The new Exide Batteries excel even Exide's best efforts of the past. They are new throughout . . new in design . . new in construction . . . new in performance ability . . with noteworthy improvements and added features that assure better service, longer life and less cost per mile of operation.

THE ELECTRIC STORAGE BATTERY COMPANY
Philadelphia 32
Exide Batteries of Canada, Limited, Toronto

Due to material shortages, present demand exceeds supply, so you may have to wait a short while. But see your Exide Dealer NOW. He'll be glad to help you get the most from your present battery until you receive your new Exide.

• Depend on the Exide Dealer for good products, good service

BUY TO LAST

WHEN IT'S AN EXIDE...YOU START

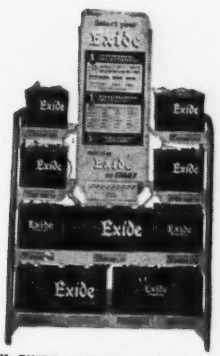
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NEW EXIDE BATTERIES



NEW EXIDE BATTERY MERCHANDISER

"IT'S GOOD TO BE AN EXIDE DEALER"

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32 • Exide Batteries of Canada, Limited, Toronto

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Firm_____

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William Crapo Durant Builder of Corporations

This last month saw the passing of one of the legendary figures of the automotive industry. William C. Durant, once called the "soul of General Motors", died at the age of 86. His career is another of the Horatio Alger stories of American capitalism which read like highly romanticized fiction but which have been surprisingly frequent in the past hundred years. Starting as clerk in a grocery store, he reached a peak where his own personal fortune was nearly $100 million.



William C. Durant

He was, however, more promoter than engineer, and he seemed to be interested not so much in automobiles as in automobile companies. And the apple of his eye was General Motors. Even his most successful excursions in other companies served only as a means to help him to get back General Motors.

In 1903 he acquired control of the Flint Wagon Works and with it the Buick car. In 1904 the name of the company was changed to the Buick Motor Car Co., and Durant was delighting the staid stockholders with his declarations that within a few years he would be producing 50,000 cars per year.

Under Durant's guidance, Buick soon purchased the Cadillac Motor Car Co., Olds Motor Works, Oakland Motor Car Co., and some smaller concerns. In 1908 General Motors Corp. was formed with $10 million capitalization. Wall Street critics predicted certain failure. The following year the new company had an aggregate net profit of $10,500,000.

In 1910 Durant's ambitious expansion ran the company so deeply into debt that he was forced to relinquish control to a group of bankers. He accepted an inactive directorship in the company.

He wasted no time in organizing, with the help of a group of friends, the Chevrolet Motor Co. with a working capital of $275,000. Operating through this company he began to buy up General Motors stock. On 15 September 1915 Durant attended the Board of Directors meeting of General Motors and dramatically announced that he now held a controlling interest in the company. In the same five years in which he had been regaining control of General Motors he had built Chevrolet into a $94,000,000 corporation.

Once again over-expansion was Durant's downfall, coupled with the severe postwar depression, and in 1920 he lost control. Once again he took no trip to the wailing wall.

On 4 August 1921 he exhibited the first models of the famous Durant Four. His new company was open for business. Exactly one year later Durant Motors Inc. was selling in important quantities the Star in six models; and the Durant Four, the Durant Six, the Flint Six, and the Locomobile in four models each.

(*Continued on page* 174)



it's SPEED

THAT PUTS YOU AHEAD—

CIRCO VAPOR DEGREASING

CLEANS PARTS IN MINUTES—NOT HOURS
INCREASES PROFITS—MECHANICS' EARNINGS

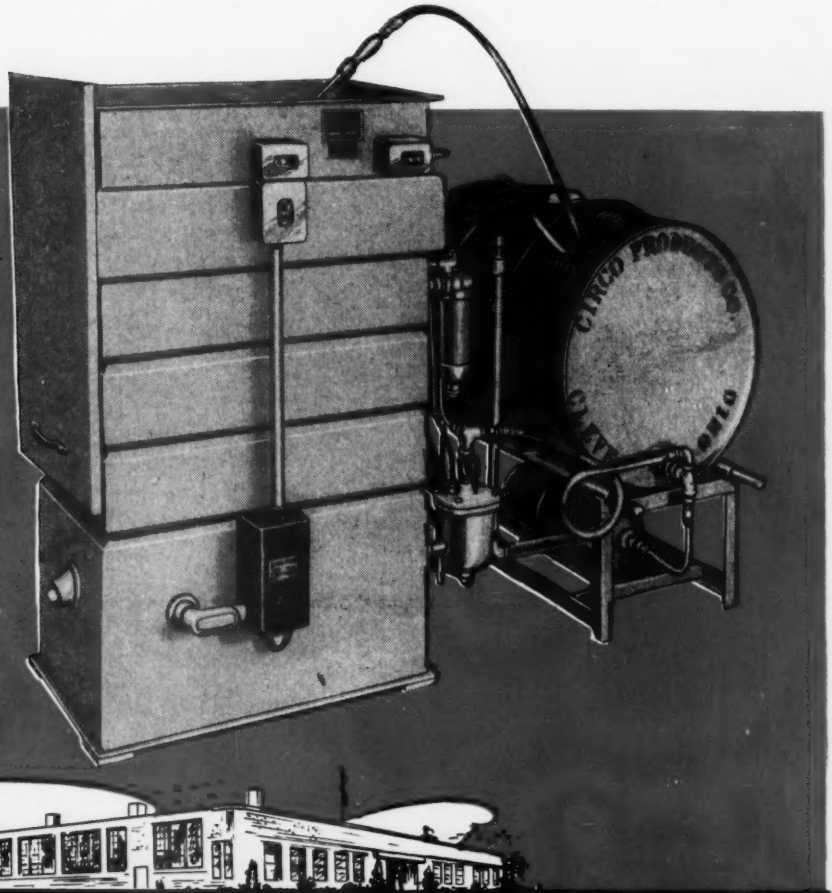
● You can thoroughly clean dirty, greasy repair parts with a Circo Degreaser in 3 minutes—complete engine blocks in as little as 15 minutes.

If you only used a Circo unit a total of ten minutes a day, it would clean more parts more thoroughly than a mechanic could scrub in four hours. At $3.00 an hour, the mechanic's time would come to $12.00. The operating cost of the Circo C-20 E model illustrated below, including solvent, is—yes, that's right—approximately five (5) cents. That's a saving of $11.95.

A Circo Degreaser requires no attention, keeps the mechanic on his own profitable job—repairs. There's a Circo unit of exactly the right type and size for your particular needs. Write for folders giving complete descriptions, specifications, capacity and cost of operation.

CIRCO C-20 E DEGREASER

Capacity 1200 lbs. of repair parts per hour. Operating cost, including solvent, 31¢ for full hour's operation. Can be supplied to operate by electricity (as illustrated), by gas, or by steam. Similar water-jacketed units of larger capacity also available. Solvent is non-inflammable, non-explosive—cleans any metal without harm.



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Vapor Degreasers
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All-A-Round Tumbler
Rock-it Parts Washer
Solvents

CIRCO PRODUCTS COMPANY

12117 BEREA ROAD CLEVELAND 11, OHIO

Studebaker Bodywork

(*Continued from page* 39)

After the windshield garnish mouldings have been taken off, the two bolts and nuts on each instrument board body bracket can be removed, as can the two nuts and washers from the studs on each bracket.

The parking brake bracket must be disconnected from the instrument board flange. The steering post bracket-to-instrument board bolts are removed, and the bracket detached from the brace rod and instrument board. Loosening the steering post bracket clamp bolt will permit the bracket to slide down the post. Finally, the center screw is removed from the top flange of the board and the board is removed.

The above procedure is reversed to install the board. It is first placed in its correct position, then the four attaching bolts, the four bracket stud nuts, the steering post bracket bolts, and the top flange center screw are put in place and uniformly secured. The windshield garnish moulding is then installed and all instruments and accessories are put back in place.

The first step in removing the windshield is the removal of the center clip from the top of the inner center bar, followed by the removal of the rear view mirror and the inner center bar itself. After the inner center bar has been taken off, the outer center bar, with the rubber weatherstrip, will come off easily.

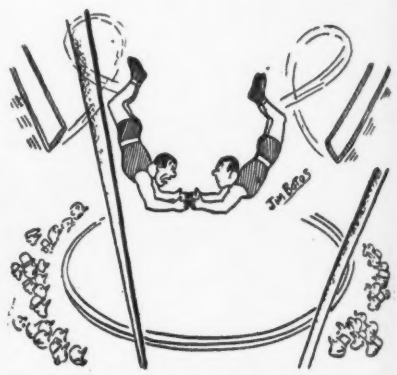
The inside garnish moulding is removed and the outside weatherstrip is pressed over the flange of the windshield opening with a putty knife or similar tool (Fig. 2). Pushing inward on the upper outside corner of the glass will then free the windshield from the weatherstrip and permit it to be withdrawn (Fig. 3).

The windshield is installed by first applying a sealer to the glass channel in the rubber weatherstrip and inserting the windshield in the weatherstrip. A bedding putty is then applied to the inside surface of the windshield opening flange, the glass and weatherstrip are pushed into the windshield opening; and, using a putty knife or similar tool, the weatherstrip is pried over the flange of the windshield opening.

Finally, the inside windshield garnish moulding and the outside center bar with its rubber weather-

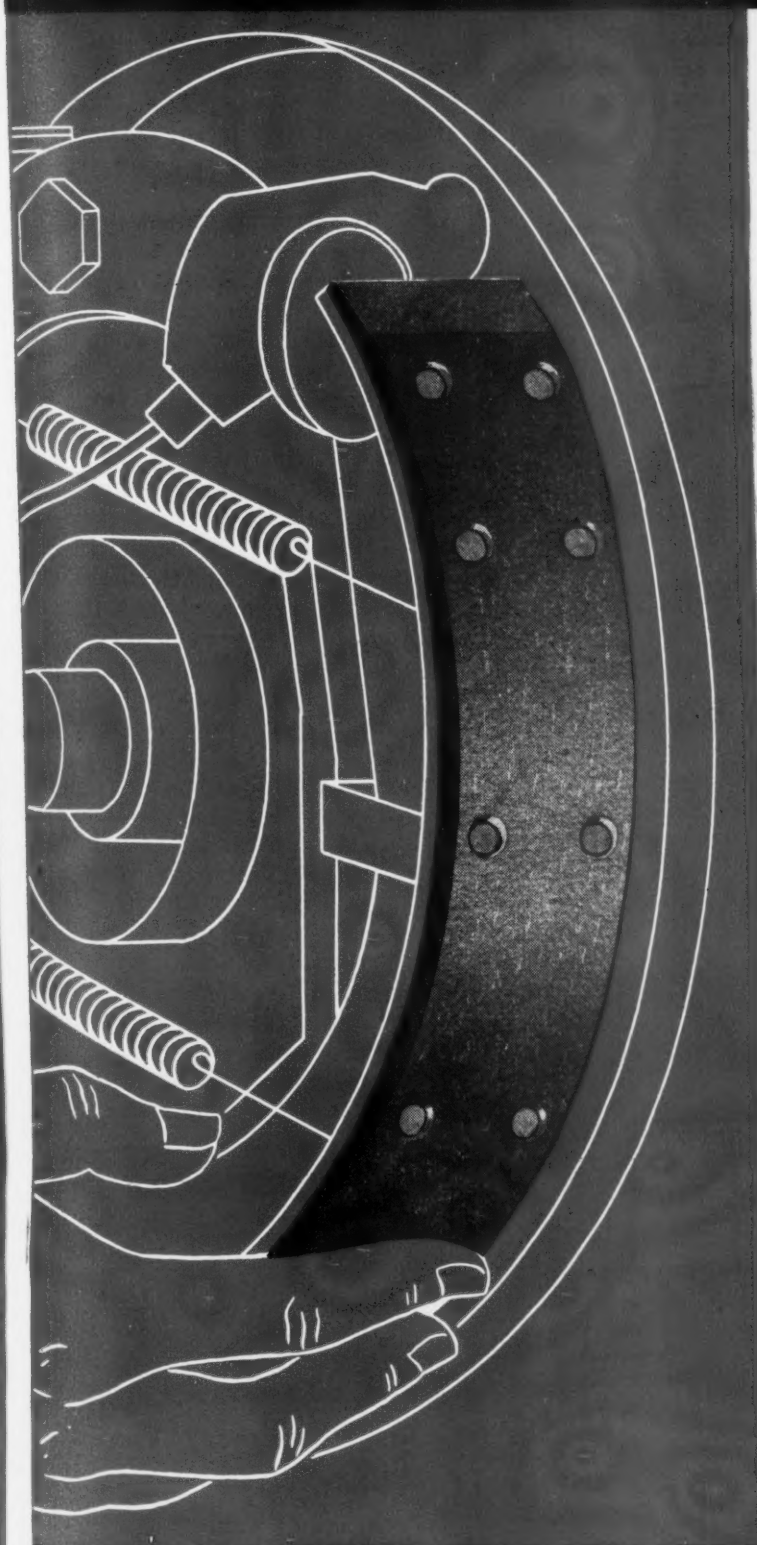
(*Continued on page* 80)





"Go back! It's your turn to catch me."

Be "Right The First Time" On Every Brake Lining Job



You are absolutely right the first time when you reline with Thermoid Brake Linings. With Thermoid you can give your customers "Precision Processing"... the exclusive Thermoid Process that relines the shoe and fits the relined shoe to the brake drum like original equipment. Thermoid "CB" Brake Lining Sets are custom-built for each make of car—and *certified* correct by the famous Pittsburgh Testing Laboratory.

Thermoid Precision Processing makes every reline job faster... and, since it eliminates the customary expensive come-backs for readjustments, Thermoid increases your reputation... and your profits!

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Custom-Built Brake Lining Sets
***Plus* "Precision Processing"**
***Equals* Brake Perfection**

THERMOID COMPANY, Trenton, New Jersey

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THERMOID • THE LINING THAT GIVES YOU THE BRAKES

Studebaker Bodywork (*Continued from page* 78)

strip are placed in position and the inner center bar, rear view mirror and center clip can be installed.

If it is necessary to install both sections of the windshield, it will be necessary to place the rubber weatherstrip on the bench, apply sealer to the glass channel in the weatherstrip, and insert the two sections of the windshield in the weatherstrip. A piece of twine is then placed around the weatherstrip, under the lip, with the loose ends of the twine centered at the bottom of the windshield. Two tapered, hardwood blocks are inserted between the upper and lower inner edges of the windshield sections, and the sections are worked outward toward the sides of the windshield opening. The twine is then pulled toward the center of the windshield so that the lip of the weatherstrip will be forced over the flange of the windshield opening.

The two-door sedan models are equipped with rear quarter windows. To remove these windows it is first necessary to remove the rear seat cushion, seat back, arm rest cover and arm rest. The garnish moulding, regulator handle and escutcheon ring are then removed.

The screw which holds the front of the rear quarter trim panel to the door striker post is removed, and the front nailing strip is gently pried inward, rolling it forward to expose the heads of the tacks. The tacks are pulled out, as are the nails which hold the rear of the trim panel to the nailing strip. The trim panel is then removed, the sealing tape is pulled off the inspection holes, the window is lowered, and the lift channel guide is disengaged from the rear run.

The window height should next be adjusted so that the window regulator lift arm pin is accessible through the inspection hole. The pin is then disengaged from the lift channel and the glass removed through the window opening flattening the inner flange of the run as required to facilitate the removal of the glass. The regulator is removed by removing the four screws and lock washers which secure it to the rear quarter panel. It can then be withdrawn through the front inspection hole.

(*Continued on page* 82)

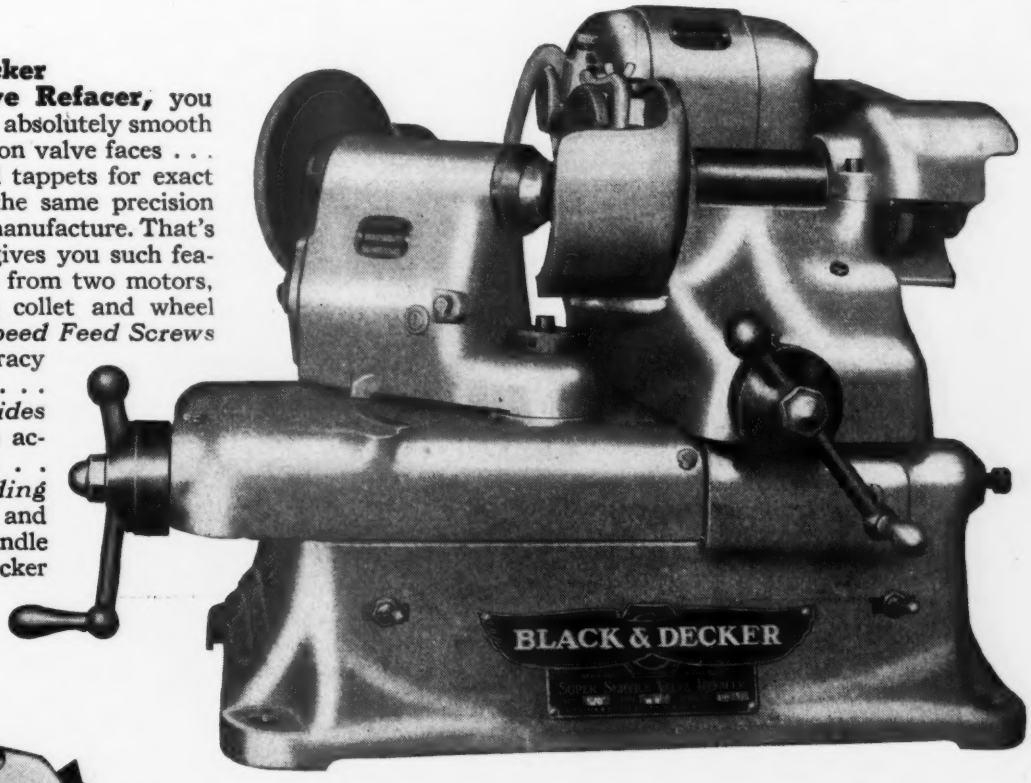


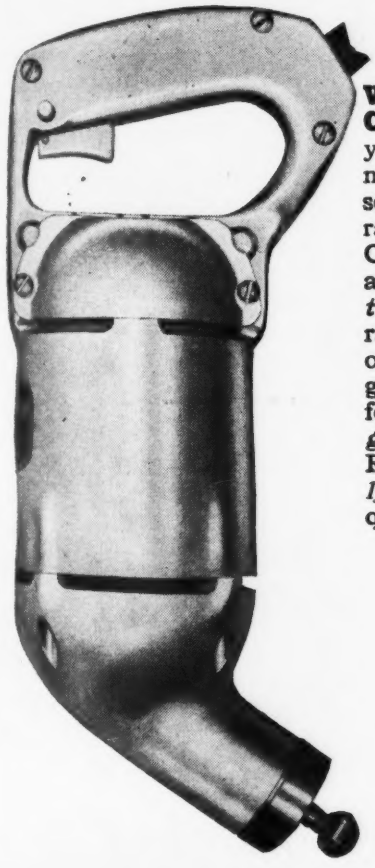


"Now shake hands, and lets you and him fight."

This Valve Reconditioning Equipment Brings Factory Precision Right into Your Shop!

With a Black & Decker Super-Service Valve Refacer, you can quickly produce an absolutely smooth surface and true angle on valve faces . . . grind valve stems and tappets for exact clearance . . . with the same precision used in their original manufacture. That's because this Refacer gives you such features as *Super-Power* from two motors, independently driving collet and wheel spindles . . . *Super-Speed Feed Screws* with screw-feed accuracy and lever-feed speed . . . *Super-Sensitive Slides* with smooth, accurate action of feed tables . . . *Super-Service Grinding Spindle,* ball-bearing and double-ended to handle both valve stem and rocker arm grinding.





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LEADING DISTRIBUTORS EVERYWHERE SELL

Black & Decker

PORTABLE ELECTRIC TOOLS

Studebaker Bodywork

(*Continued from page 80*)

In reassembling, the window regulator is inserted through the front inspection hole and the four screws and lock washers which hold the regulator to the rear quarter panel are replaced. Final tightening of the screws should be delayed until the window has been properly aligned.

The glass and lift channel are lowered through the window opening, engaging the front guide on the lift channel with the front window run. With the lift channel resting on the regulator, the glass is tilted; and, working through the rear inspection hole, the rear guide on the lift channel is engaged with rear window run. The regulator lift arm pin is then engaged with the lift channel.

The window regulator is shifted in its slots until the window travels freely in its runs and has no tendency to tilt forward or backward. When the regulator has been properly positioned, the four screws which hold the regulator to the rear rear quarter panel are securely tightened. The inspection holes are covered with sealing tape and the front edge of the trim panel is tacked to the front nailing strip. The unfastened edge of the trim panel is then swung into position, (the escutcheon plate spring must be on the regulator shaft) and is tacked to the rear nailing strip. Finally, the screw which holds the front of the trim panel to the door lock striker post is installed, followed by the escutcheon ring, regulator handle, garnish moulding, arm rest and cover, and rear seat back and cushion.

The first step in removing the rear window glass is the removal of the inner center bar, rubber weatherstrip and outer moulding. The rubber weatherstrip is then pressed over the flange of the window opening and the window is removed by pushing inward on the upper outside corner of the glass.

The glass is replaced by applying a sealer to the glass channel in the rubber weatherstrip and inserting the glass therein, then placing a piece of twine around the weatherstrip, under the lip, with the loose ends of the twine centered at the

(*Continued on page 84*)



Winter leaves a motor all off key—full of sluggish sludge that forms so fast in colder weather. Now, before warm weather bakes dirt in—remove the gum, restore the hum with MARVEL MYSTERY OIL.

Add MARVEL to oil in every crankcase—and to all gasoline. MARVEL peels the sticky varnish coat off valves and cylinder walls. It purges pump screens, unclogs ring slots, scrubs out feed lines—restores that new-car sparkle throughout the entire motor.

Then, MARVEL goes still further . . . clean, sludge-free surfaces are filmed with wear-resistant armor. MARVEL toughens film strength—holds up where weaker lubricant folds up . . . in sizzling top-cylinder zones.

Tune up with MARVEL MYSTERY OIL this Spring. There's extra pickup, pep and power for every motor—and proven extra profit for your pocket. Get in the act—make money with MARVEL—order from your Jobber TODAY! Emerol Manufacturing Co., Inc., 242 W. 69th St., New York 23, N. Y.

MARVEL MYSTERY OIL



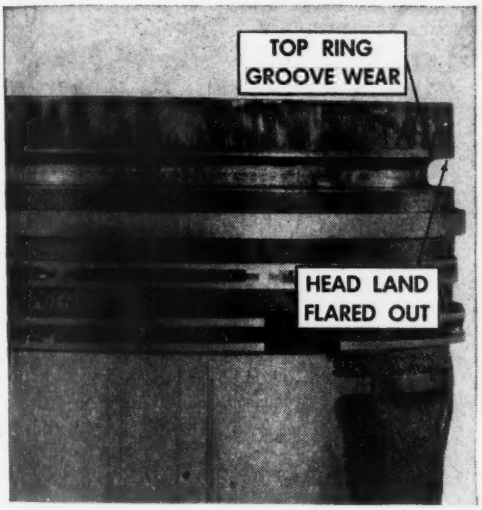


"You'll average 18 miles to the gal, and 18 gals to the mile."

The only dependable, economical answer to top ring groove wear...

SEALED POWER GI-60

MAKES OLD PISTONS NEW — KEEPS NEW PISTONS YOUNG



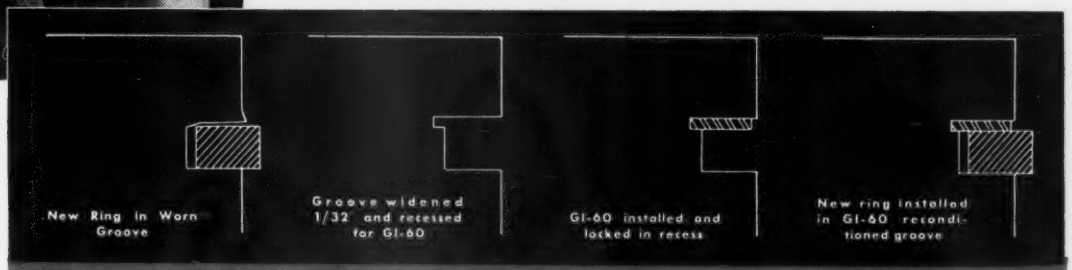


ALL good mechanics know that worn top ring grooves will put two strikes on the best piston rings ever made. A new ring installed in a worn top groove permits gases to blow by, causing short ring life, cylinder wear, and excessive gas waste. If you widen the groove and put in a wider ring, you are changing the original specifications of the engine manufacturer and inviting trouble. If you put in an ordinary spacer, you have merely put in a wider ring in two sections.

The new Sealed Power GI-60 Contracting Groove Insert is not a "spacer." It does not float, but is anchored securely at the top of the ring groove. Before the GI-60 is installed, the top groove is re-grooved to an absolutely true surface 1/32" wider than the original groove, with a 1/32" recess at the top. Into this recess the GI-60 Groove Insert is fitted, locking itself permanently in place, forming a heat-treated spring-steel shield that resists wear and pounding of the top land better than either aluminum or cast iron can resist it.

Your Sealed Power jobber is now equipped to furnish this service for you. It is the only dependable, economical answer to top ring groove wear. It is equally effective in worn or new replacement pistons. The cost is low and the benefits are great. Thorough field tests by commercial fleets have proved the efficiency and value of GI-60 beyond any doubt. Ask your jobber now for this new Sealed Power service.

And when you need new pistons it will pay you to specify Sealed Power Heavy Duty Pistons



SEALED POWER PISTON RINGS

SEALED POWER CORPORATION

MUSKEGON, MICHIGAN • STRATFORD, ONTARIO

Studebaker Bodywork

(*Continued from page* 82)

bottom of the window. A string is then tied around the center of the glass and the weatherstrip to hold the latter in place.

Putty is applied to the inside surface of the window opening flange, and liquid soap is applied to the inner edges of the center strip and the two outer corners. The glass and weatherstrip are pressed into the window opening. The string tied around the center of the glass and weatherstrip is removed, and the ends of the twine are pulled toward the center of the glass so that the lip of the weatherstrip will be forced over the flange of the rear window opening.

Finally, the outer moulding and the inner weatherstrip and center bar are replaced.

Before the headlining on these cars can be removed, the rear view mirror, sun visors, windshield garnish mouldings, both rear quarter window assemblies, assist straps, dome lamp assembly, rear seat back, and rear window and weatherstrip must be removed. The tacks which hold the headlining to the nailing strips around the rear window, quarter windows and windshield should then be removed.

With a sharp knife the headlining is cut loose over the doors and around the sides of the car, shearing along a line parallel to the lower edge of the roof, and about an inch above the weather cords located above the doors. After the headlining has been cut loose, the drive screws which hold the ends of the bows to the roof frame are accessible, and their removal will permit the removal of the headlining and the bow assembly. Finally, the lining which still remains is removed by pushing up, with a putty knife, on the lining between the headlining side retainer and the roof, to disengage the material from the retainer teeth.

The first step in the replacement of the headlining consists in removing the bows from the old lining and inserting them in the corresponding listings in the new headlining. The installation of the bows in the proper listings is important.

(*Continued on page* 86)

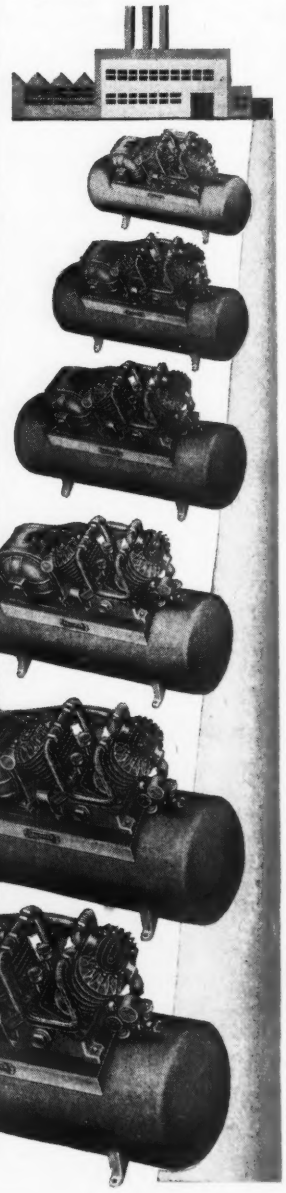
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A complaining customer can be awfully expensive. Bad news travels fast. A sound idea for protecting your reputation for service is plenty of time and labor saving air operated equipment plus a *dependable* supply of air. When it comes to air compressors, no name is more highly regarded for dependability than BRUNNER. One good customer is worth more to you than the cost of any compressor—so why settle for anything less than the best?

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Utica 1, New York, U. S. A.

BRUNNER SINCE 1906
AIR
helps you serve better



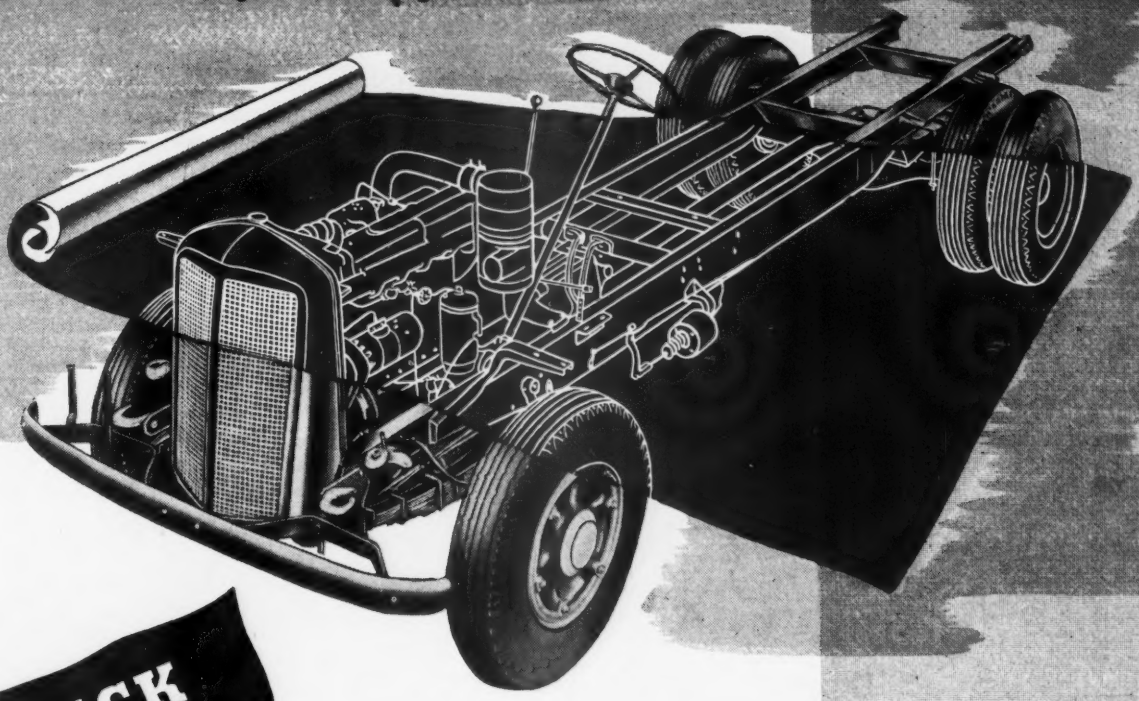
BRUNNER SINCE 1906

SINGLE AND TWO STAGE MODELS
¼ HP. TO 10 HP.



"No, let's leave it down. I think you're beautiful with the wind and the rain in your hair."

BLUEPRINT YOUR REQUIREMENTS NOW!



TRUCK PARTS

Use the quick-reference Property List available at any of the 33 WAA Regional Offices conveniently located throughout the country. Check your requirements against available stocks. Information includes *manufacturer's code number, manufacturer's catalogue part number, manufacturer's part description, unit of pricing, quantity and manufacturer's list price.*

HERE'S HOW YOU ORDER TRUCK PARTS

- Go to your nearest WAA Regional Office.
- Ask for the Automotive Parts Section.
- Examine the Property List.
- Make up your own list by manufacturer's part number.
- Place your order.
- That's how simple it is!

All the information you need, for ordering truck parts at huge discounts, is compiled in one volume—which is kept up-to-date by means of a revised inventory every six weeks. Supplements on critical items, for priority claimants only, are issued every three weeks. You can tell at a glance what we have, how much is available, and the manufacturer's list price.

This easy-to-use reference covering millions of surplus truck parts is for your convenience in ordering. The parts listed were manufactured for all makes and models used by the armed forces. This information is available at the Automotive Parts Section in each WAA office, but is centrally compiled in Detroit.

Make full use of this up-to-date inventory to solve your parts requirements problem. You can place your order on the spot for prepaid shipment. Visit or write the Automotive Parts Section of your nearest WAA Regional Office at your earliest opportunity.

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WAR ASSETS ADMINISTRATION

GOVERNMENT WAA SURPLUS

Offices located at: Atlanta • Birmingham • Boston • Charlotte • Chicago • Cincinnati • Cleveland Dallas • Denver • Detroit • Fort Worth • Helena • Houston • Jacksonville • Kansas City, Mo. Little Rock • Los Angeles • Louisville • Minneapolis • Nashville • New Orleans • New York • Omaha • Philadelphia Portland, Ore. • Richmond • Salt Lake City • St. Louis • San Antonio • San Francisco • Seattle • Spokane • Tulsa

704-S

TRADE DISCOUNTS
(Minimum sale—$500 net)

Discount off manufacturer's list price as shown in Property List:

Fleet Owner (5 or more vehicles) 45%

Service Garage 50%—
Vehicle Dealer 55%

Manufacturer, Distributor, Exporter 75%

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WAA POLICY

Some parts are in limited supply. When orders for such parts are received, the parts are allocated equitably as follows: 30% of parts in short supply will be held to fill orders from Federal agencies. Orders from other buyers will be filled in the following sequence:

(1) Certified Veterans of World War II

(2) Subsequent priority claimants

(3) Non-priority claimants

Other parts are in normal supply. A reserve of 10% of parts in normal supply will be held to fulfill the needs of priority claimants. Veterans of World War II should apply to their nearest WAA Regional Office for certification; the actual certificate must be attached to a Veteran's offer to purchase.

All orders are subject to existing priority regulations and to prior sale.

★ ★ ★

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Your business is solicited. Much material which is surplus in the United States is urgently needed or is readily saleable in other countries. Watch for offerings which may be of interest to your clients; if prices are set to different trade levels, you are entitled to buy as a wholesaler.

Studebaker Bodywork (*Continued from page* 84)

The new lining is placed in the car and the rear bow is installed with the drive screws. Then, with the rear bow hanging in an inverted position, the sides of the lining near the rear bow are pushed up under the lining retainer, engaging the retainer teeth. The rear bow is then swung into its proper position. Working forward, this operation is repeated on each of the remaining bows.

The lining is stretched around the rear window, windshield, and rear quarter window openings, and tacked to the tacking strips. The windshield garnish mouldings are then installed.

To complete the installation, the sun visors, rear view mirror, dome light, assist straps and rear seat back are replaced.



Now you can make spot checks instantly, without hauling over a drop cord. Just reach for your Flex-lite for inspection of mufflers, shocks, transmissions . . . or for checking under-dash wiring, reading motor serial numbers, checking motor blocks. Wherever direct rays won't reach, the Flex-lite cord threads its way through to throw brilliant light on the exact spot you want to see. Flex-lite fits tool kits nicely . . . or can be carried in your pocket . . . ready for instant use. To get your Flex-lite, call your automotive jobber today! Available in pen-light size at $2.00.

$2.95
LESS BATTERIES

RUGGEDLY BUILT FOR LASTING SERVICE

Handsomely buffed all-aluminum battery case is light weight, ribbed for good grip, waterproof, and practically unbreakable. Holds two standard flashlight batteries. Unique, positive-acting thumb switch. Tear-drop bulb resists breakage. 9" cord . . . mesh-steel covered . . . is rust-proof and permanently flexible. If your jobber can't supply you, order direct.

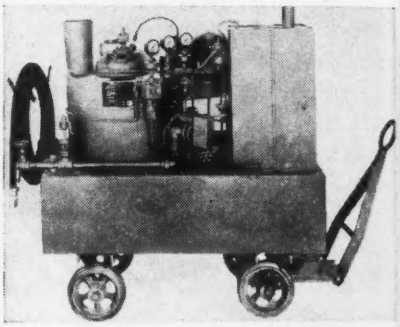
Aero-Motive

AERO-MOTIVE MANUFACTURING CO.
1803 ALCOTT STREET KALAMAZOO 24, MICHIGAN

Improved Oakite-Vapor Steam-Cleaning Unit

A new, improved Oakite-Vapor steam-cleaning unit, for use in cleaning and paint-stripping a wide variety of articles is now available for immediate delivery, according to Oakite Products, Inc., of 40B Thames St., New York 6, N. Y.

The unit, an enclosed-coil type, down-draft flame steam generator, delivers a hot vaporized spray in



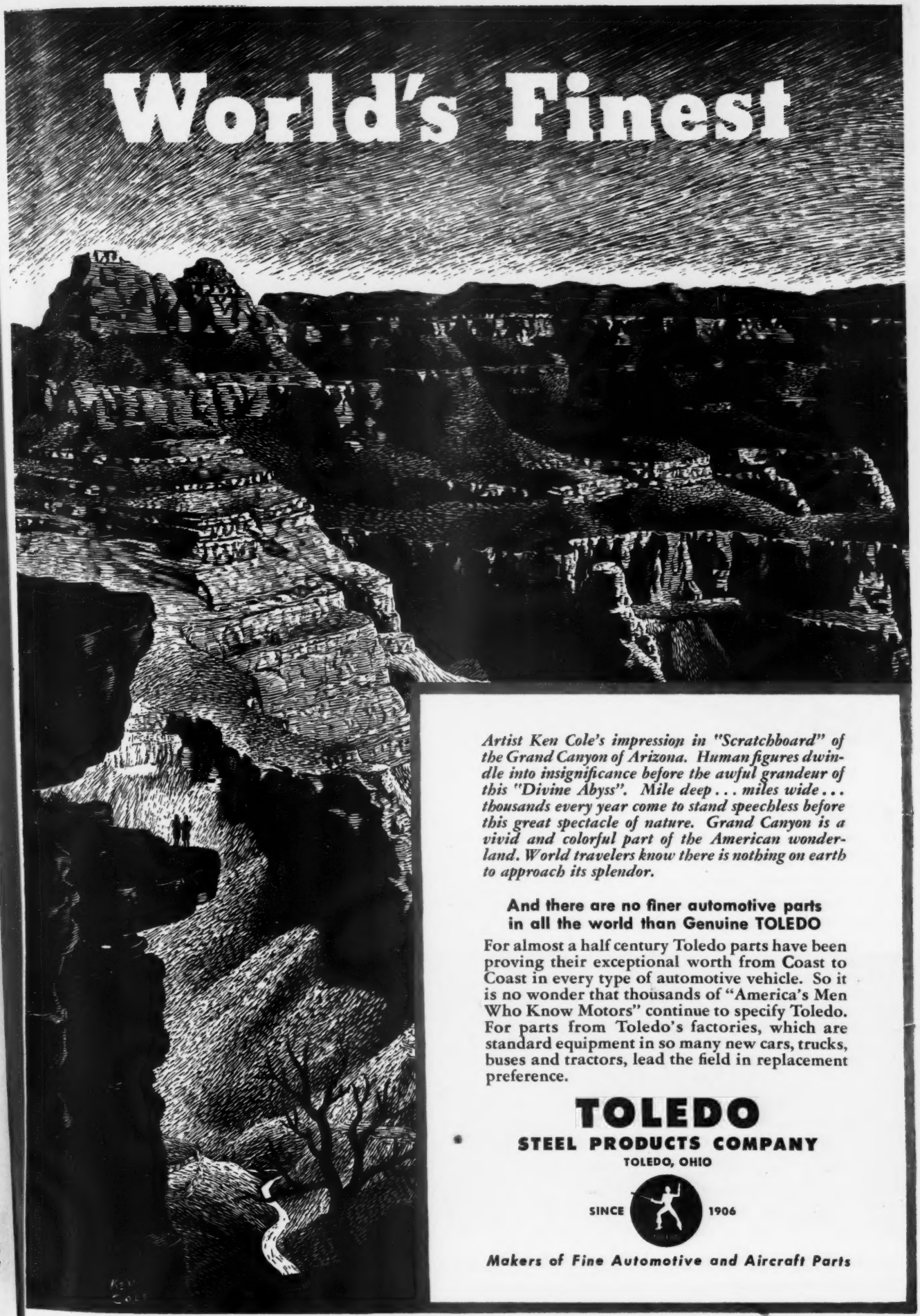
either wet or dry state under pressures up to 200 lbs., and generates sufficient pressure to operate two steam guns simultaneously. The improved model incorporates a simplified grouping of gages and controls; a redesigned piping system; and a compressed air valve accessory for two-minute anti-freezing of the entire unit. The cleaning solution is aspirated through the guns from a separate solution tank, by-passing the steam coils and eliminating coil-clogging by the compound.

Elroy Cylinder Tool

The Elroy cylinder tool, for deglazing and burnishing cylinders and removing glaze and varnish, has been introduced by the Elroy Products Company, 529 South Seventh Street, Minneapolis 15, Minn.

This tool may be operated with a ¼ in. electric drill and requires no special set-ups or adjustments. It expands to fit all passenger and light truck cylinder bores of 3 in. to 3¾ in. Each abrasive unit is supported by a flexible steel spring for increased abrasive contact with the cylinder wall. The price is $8.95, complete with one set of S-150 abrasives.

World's Finest



Artist Ken Cole's impression in "Scratchboard" of the Grand Canyon of Arizona. Human figures dwindle into insignificance before the awful grandeur of this "Divine Abyss". Mile deep . . . miles wide . . . thousands every year come to stand speechless before this great spectacle of nature. Grand Canyon is a vivid and colorful part of the American wonderland. World travelers know there is nothing on earth to approach its splendor.

And there are no finer automotive parts in all the world than Genuine TOLEDO

For almost a half century Toledo parts have been proving their exceptional worth from Coast to Coast in every type of automotive vehicle. So it is no wonder that thousands of "America's Men Who Know Motors" continue to specify Toledo. For parts from Toledo's factories, which are standard equipment in so many new cars, trucks, buses and tractors, lead the field in replacement preference.

TOLEDO

STEEL PRODUCTS COMPANY

TOLEDO, OHIO

SINCE 1906

Makers of Fine Automotive and Aircraft Parts

Paint Preparation . . . (*Continued from page* 45)

body flaws, then filing, grinding, sanding, priming and painting. Millions of American cars now need a standard or basic refinishing job, either in whole or in part.

Skipping the recolor job altogether, let's consider the work necessary in getting a car ready for painting, emphasizing those phases of the operation that are designed to give the body or panel that supersmoothness that makes for a good final appearance.

We'll assume that the rough body work has already been done. Dented and twisted panels have been straightened, rusted areas have been repaired, and hammering, welding, jacking and replacing have restored the body to the approximate contours of the original car. This phase of the work must be done with the greatest care. It won't be possible to get any kind of results if hills and valleys are left for the grinder to remove. Not only will the grinder cut through the metal on the high spots, but the car may end up looking as though it had partially melted in the hot sun.

Once the heavy work has been done, however, and the car again resembles what the factory originally had in mind, there remain many high and low spots that still must be removed before the paint man even draws a bead with his gun.

Take, for instance, the matter of shrinking. Body bumps and bulges, no matter how carefully hammered and straightened, cause the metal to pull and stretch. This must be shrunk with heat until it draws and softens and can be pushed back in place. This scales and hardens the metal as it cools, of course, and it must be ground smooth again with grinding disc and sander.

The heavy straightening and shrinking done, numerous uneven spots will still remain and must be located and smoothed off level. This is done with a power sander, using a grit that doesn't dig too deep yet cuts the paint and metal down to show the low spots. A No. 24 grit should be about right at this stage of the operation. This, by the way, is a severe test of the abrasive used, as the necessity of cutting

(*Continued on page* 90)

Immediate Deliveries of New Arc Welder



The New "Fleet-Arc Jr." . . . the welder with the easy striking arc.

● Immediate delivery of the popular new low-priced A.C. welder, the Lincoln "Fleet-Arc Jr.", is now being made in most localities as a result of expanded manufacturing facilities at the Lincoln plant.

The "Fleet-Arc Jr." simplifies repair work of all kinds and brings in many profitable jobs. Its exclusive "Arc Booster" makes arc-striking easy, practically eliminates electrode sticking. The "dial tuning" current control is smooth and continuous — gives the exact current desired. No plugs or taps to shift.

Safe and Economical

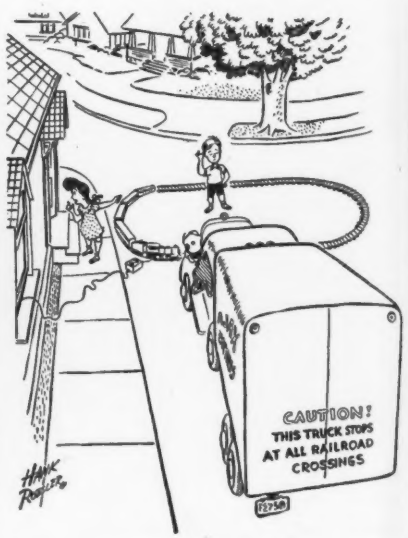
Welding current range of the "Fleet-Arc Jr." is 20 to 180 amperes. It is safe and economical to operate because open circuit voltage never exceeds 52 volts. The REA and power companies approve it.

The "Fleet-Arc Jr." may be seen at the nearest Lincoln Weldealer's. Free descriptive bulletin No. 365 may be obtained by writing The Lincoln Electric Company, Department 522, Cleveland 1, Ohio.



QUICK. Auto frame channel, cracked across top flange, was welded in 3 minutes. Shops with a "Fleet-Arc Jr." can build up a brisk business in big-profit jobs like this.

Advertisement



"Mama, Junior's stopping trucks again."



THINK FIRST OF *Monmouth*

Monmouth Tie Rod Ends—Drag Links, Tie Rods, Shackles, Wheel Suspension Parts and King Bolt Sets are all built to original equipment standards.

The line is complete for all popular make cars and trucks; in fact, for any automotive application, ask for Monmouth Chassis Parts—packaged in distinctive Monmouth boxes for ease in identification and handling. Distributed through N.A.P.A. Warehouses coast to coast to provide the most economical service to the repair garage. Ask your jobber for Monmouth Chassis Parts—the distinctively packaged line.

Your NAPA Jobber is a Good Man to Know!

MONMOUTH PRODUCTS COMPANY • CLEVELAND, OHIO

FOR ENGINE BEARINGS
CLUTCH PLATES AND PARTS
CHASSIS PARTS

Monmouth Trade Mark *is the name*

Paint Preparation

. . . (*Continued from page* 88)

both paint and metal in the same operation may cause the sander to load heavily, and poor quality abrasives quickly become ineffective. Welds and hard spots cause the disc to wear out faster, while inside contours and curves tend to cause the disc backing to let go, crumbling the disc at the edges. Good quality grinding equipment should be used throughout the job, or the shop will be wasting time and money on jobs that must be done over due to the failure of abrasives.

After the initial standing with coarse grit, all possible low spots that remain are alternately hammered and sanded level, except in a few hard-to-get-at places. These inaccessible spots must be filled in with body solder that is worked flat while it is still hot and plastic. This, in turn, must be ground smooth with the sander until it matches the rest of the metal. The softer solder tends to load the sander quickly, and again, satisfactory results cannot be expected from poor quality abrasives. A body file is then used to cut down the high spots on the larger flat areas.

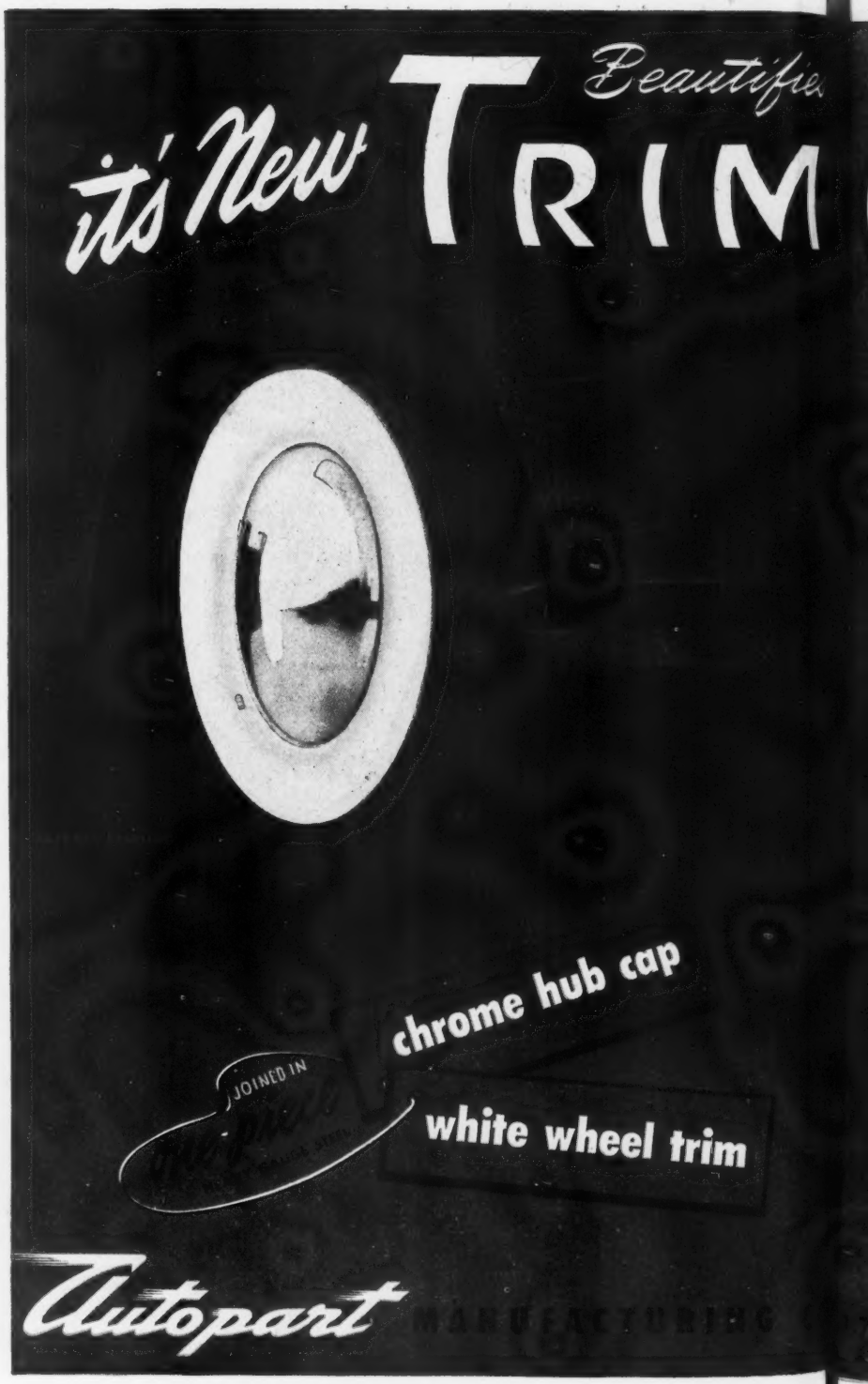
After the soldering and flat filing have been carefully completed, the entire body or panel is gone over again with the sander, to take out the scratches left by the coarse sanding and filing. This time a finer grit, about No. 50, should be used. This grade is suitable because it takes out the scratches faster than the finer grits, without too much loading, yet does not leave scratches deep enough to show through to the final finish.

A touch-up sanding should now be given if the job is to be really first-class, for there are still, no matter how much care has so far been taken, places which can stand finishing up with abrasive cloth wrapped around a file. The abrasive cloth (No. 80 is suitable) is used here because of its ability to get into inaccessible spots and because it does not scratch easily.

After all this, it seems as though it would finally be time to slap a little paint on. Actually, however, there's still more preparation necessary. If, for instance, replacement panels are being used, they must be washed free of the anti-rust preparation that the factory applies before shipment. Furthermore some lacquer manufacturers recommend washing all surfaces



"I guess I should have turned left back there."



with an anti-rust preparation immediately before spraying on the primer coat so as to insure good adhesion. Replacement panels as they come from the maker will not hold a priming coat, and must be given a good tooth by scuffing them over with abrasive cloth or paper.

It is at this point in the refinishing job that most body man-painter feuds begin, for any imperfections left by the body man now become the responsibility of the painter to cover up. Also, the number of priming coats that will have to be put on depends directly upon the degree of perfection that the body has achieved in the hands of the body workers.

The car is now ready for the paint shop. The priming coats are put on, and many of them may be necessary unless the body shop has done its work thoroughly and well. The idea is to cover the scratches so thoroughly that the entire primer coat can be wet sanded without rubbing through to the bare metal over the uneven spots that will inevitably remain.

Sanding the primer is of prime importance, for there must be a perfect base for the final paint coats. This sanding is done wet because of the lubricating action of the water and slush, because it shows up all the imperfections that may remain, and because the water prevents the grit from loading up with paint particles. A No. 240 grit is usually satisfactory for this job.

Even after the final color coat has been sprayed on, the sanding is not over. The car or panel should be finally rubbed down with No. 400 wet sandpaper to take off any dust, rough spots, orange peel or scratches that may have survived the intensive smoothing already done.

Lastly, the car is washed and polished and the trim and fittings replaced.

Synthetic Metal Alloy In Putty Form

A synthetic metal alloy in putty form, packaged in pint, quart and gallon cans under the trade name of "New Metal" is being placed on the market for use in patching auto and truck fenders and bodies that have become dented, pitted or perforated. It is applied with an ordinary putty knife or thinned for spray or brush application. It dries harder than lead and can be filed or sanded smooth for painting. No heat is necessary.

"New Metal" is manufactured by the Howard Paint Division of the Reconditioning Products Corp., 5201 Denison Ave., Cleveland.

..Covers entire wheel

WHEEL

Sensation of the Year

TRIMWHEEL is something new, different, beautiful . . . something to step up your sales and profits. For TRIMWHEEL gives distinctive, streamlined beauty to every car . . . conceals wheel structure, improves the new car—modernizes the old. Made entirely of heavy gauge steel, TRIMWHEEL consists of double-coated white baked enamel wheel trim, and gleaming hub cap heavily chromium plated to car manufacturers' specifications. The complete *one-piece* TRIMWHEEL unit snaps on or off freely, holds securely, retains its shape, and cannot be injured by abuse or tire blow-out. Minimum inventory—two stock numbers (fitting any 15" or 16" wheels), serves practically all cars, new or old. Attractively packaged—four TRIMWHEELS, retaining rings, Schrader valve stem extensions, all ready for quick installation.



"I've never seen anyone quite so cautious about lightning."

Bookkeeping . . . . . *(Continued from page 44)*

To illustrate the Journal entry and consequent posting more clearly let us look at several possibilities.

If on May 2, B. Gladd bought four tires at $16.00 each for cash, the Journal entry would be

Cash (sold four tires to B. Gladd)	64|00	
Merchandise		64|00

and postings would be made to the Cash Ledger and the Merchandise Ledger.

If he had bought them on account, the entry would be

Accounts Receivable (B. Gladd, four tires @ $16.00)	64|00	
Merchandise		64|00

and postings would be made to the Merchandise Ledger and to the Accounts Receivable Ledger where B. Gladd's account would be debited $64.00.

If he had bought them and given a 10-day promise to pay note the entry would be

Notes Receivable (from sale of four tires to B. Gladd)	64|00	
Merchandise		64|00

and the proper postings made to the Ledgers. When he pays his note the Journal entry is

Cash (from B. Gladd for note of 2 May 1947)	64|00	
Notes Receivable		64|00

And the posting would be to the credit column in the Notes Receivable Ledger, thus making B. Gladd's account even, and to the debit column in the Cash Ledger.

It is possible to change a set of single entry books into double entry books fairly easily. The debit and credit system does not change, but some new Ledger accounts will be needed to show the balance at all times. The first act in changing the books is to draw up a Statement of Assets and Liabilities, as explained last month. This lists as Assets: Cash on hand, Accounts Receivable, Notes Receivable, Equipment, Merchandise, and so forth. The Liabilities are Accounts

(Continued on page 95)





"I sometimes wish Bill wasn't majoring in languages. His Scotch has been costing $50 per month."



SELLING S.F.E. Auto Littelfuses is a good deal both for you and your customers! Littelfuse patented features offer extra protection and value found in no other make. An exclusive solder-locked cap assembly absorbs physical strain, completely protecting the element . . . there are no cements to deteriorate or loosen. Center blowing, and a specially grooved element further strengthens Littelfuses against shocks and vibration.

Littelfuses are medium acting, made to sizes specified by the Society of Automotive Engineers and approved by Underwriters' Laboratories. Lengths are graduated from 5/8" to 1-7/16" according to their 4, 6, 9, 14, 20 and 30 ampere ratings to guard against possible over-fusing.

Intensive advertising assures quick acceptance. Sell Littelfuse and you sell the best! Write today for the new Littelfuse catalog number 9 which gives you prices and full details.



NEONIZED SCREW DRIVERS

Neon tube in handle glows when blade contacts current of 1000 volts or more. Tests spark plugs, ignition cables, high voltage lines — indicates radio fields, static electricity. Neon tube lasts as long as the tool. Overall length 7 inches. Mounted on individual cards. A quick seller!

LITTELFUSE FIRST IN CIRCUIT PROTECTION *Incorporated*

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TELEOPTIC GOES FAIR TRADE ON ENTIRE LINE

WHAT TELEOPTIC'S FAIR TRADE POLICY MEANS TO YOU

TELEOPTIC
directional signals

FOG-KING
fog lights

ROAD-KING
driving lights

REAR-KING
back-up lights

SNO-KING AND FIRE-KING
emergency lights

KLEER-KING
clearance lights

TRAC-KING
tractor lights

STOP-KING
stop lights

TELE
parking lights



WHAT IS "FAIR TRADE"?

Under laws now in effect in *forty-five states the right of a manufacturer to protect fixed retail and resale prices of products is legally authorized, recognized and enforceable. Any one who sells at a price other than that fixed by the manufacturer can be legally stopped and such person is liable for substantial damages.

*All states except Vermont, Missouri and Texas, and the District of Columbia.

- **It eliminates unfair competition in that your competitor cannot sell our product for a price different from yours.**
- **It sustains public confidence in the unfailing high quality of our product.**
- **It guarantees you a rightful margin of profit.**
- **It enables every service station and retailer to compete on an equal basis for both passenger car and truck fleet business.**
- **Jobbers and dealers will have a mutual interest in the promotion and sale of Teleoptic products.**

No automotive retail outlet likes a brand on which price cutting is permitted, and no service station likes a brand on which retail outlets are allowed to kick around the standard price. Price wars are always senseless; they destroy public confidence in quality of the product and lose money for everyone, service station, retail outlet or jobber. Because you and we know that no one ever wins with price cutting tactics, we are adopting "Fair Trade" as a sales policy in your state. We believe in "Fair Trade" as a sound, sensible policy that works to the advantage of everybody.

Write for catalog and prices

ORDER ONLY THRU YOUR JOBBER

THE Teleoptic Company

1257 MOUND AVE. RACINE, WIS.

When writing to advertisers please mention Motor Age

Bookkeeping . . . . . (Continued from page 92)

Payable, Notes Payable, and the owner's Net Capital.

In the Journal write, "The owner has this day decided to convert his books from Single Entry to Double Entry. The net capital is shown by the following balances:" The Assets are then listed and the amounts debited. The Liabilities are listed and the amounts credited. The Ledgers which are represented in the Assets and Liabilities, such as the Accounts Receivable Ledger, are then begun by posting the proper debit figure in the Ledger itself together with the date.

After the transfer is completed all the debits from the ledgers and all the credits are usually added and the results set down in the General Ledger opposite the various accounts, as though the bookkeeper were almost repeating the Statement of Profit from the old single entry books.

It is customary to make this table, called a Trial Balance, even though the bookkeeper is certain that there is no error.

In the next article some of the ways in which these figures can be used to help in the management of the business will be discussed—how to figure the cost of goods sold, the percentage of profit and so forth.

Firestone Manual on Farm Equipment

A comprehensive manual containing information on the selection, handling and maintenance of farm tires of all types has just been published for tire and implement dealers by the Firestone Tire and Rubber Company, of Akron.

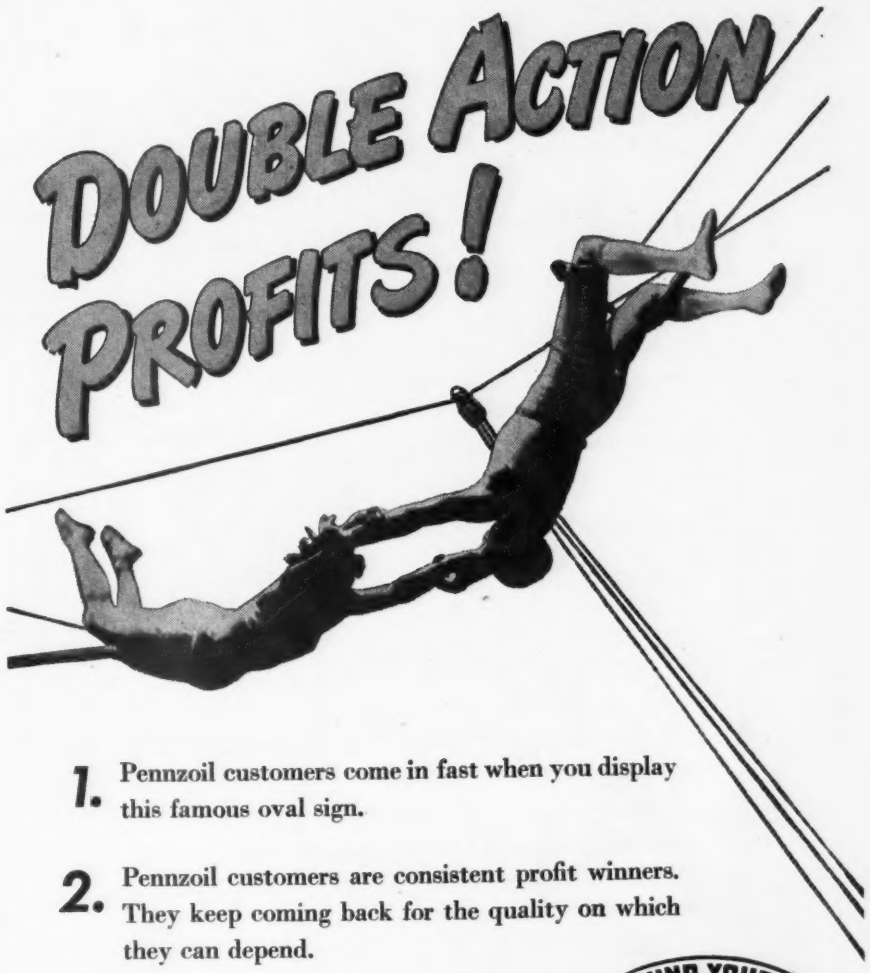
Contents of the Firestone Farm Market Manual include tire specifications for all tractors, combines and farm implements; instructions on wheel cut-down change-overs and mounting; demounting and repairing farm tires and tubes; data on tire construction and load capacities; recommended inflation pressures, and liquid weighing of tractor tires.

The manual is distributed to Firestone dealers, implement dealers and Company representatives.

Nickltex All-Nickel Scour Cloth

Made of solid high nickel alloy wire, which is rustless, corrosion resistant and free from copper or iron content, Nickltex is a new scour cloth made by the Metal Textile Corporation of Orange, New Jersey. The makers claim that it will take twice the bending, wear twice as long and is more versatile in use than comparable industrial sponge.

Nickltex is knitted into the cylindrical form of a sleeve and is made in an endless chain without loose ends. It can be unrolled to clean tubing and intricate shapes in the manner of an ordinary polishing cloth, or rolled into a ball. The construction permits the free passage of water or other solvents for rinsing and cleansing purposes.



1. Pennzoil customers come in fast when you display this famous oval sign.

2. Pennzoil customers are consistent profit winners. They keep coming back for the quality on which they can depend.

This outstanding acceptance and performance record offers a great opportunity for you to increase your profits right now, during the summer change-over season. Find out about it from your Pennzoil distributor . . . or write to us for his name.

SOUND YOUR Z
100% Pure Pennsylvania
PENNZOIL
Safe Lubrication

NEARLY 40 MILLION ADS A MONTH TELL MOTORISTS THIS IS THE SIGN OF BETTER DEALERS, COAST TO COAST.

THE PENNZOIL COMPANY • Executive Offices • OIL CITY, PA.
*Trade-mark Registered
Member Penn Grade Crude Oil Ass'n., Permit No. 2

PENNZOIL MOTOR OIL & LUBRICANTS

Regulators . . . . . (*Continued from page* 47)

voltage causes an increasingly strong magnetic field which soon reaches a value sufficient to pull the relay armature down against its spring tension so that the relay contact points close. This directly connects the generator to the battery so that the generator can charge the battery. The current flows through the series winding in the right direction to add to the magnetism holding the relay contact points closed.

HOW RELAY OPENS

When the generator slows down or stops, its voltage drops so that current begins to flow from the battery to the generator. This reverses the flow of current through the cutout relay series winding so that its magnetic field reverses. Thus it no longer helps but opposes the shunt winding. As a result, the combined magnetic field is greatly reduced and the armature spring tension pulls the armature up and separates the relay contact points. This opens the circuit between the battery and generator and prevents the battery from discharging through the generator.

CURRENT REGULATOR

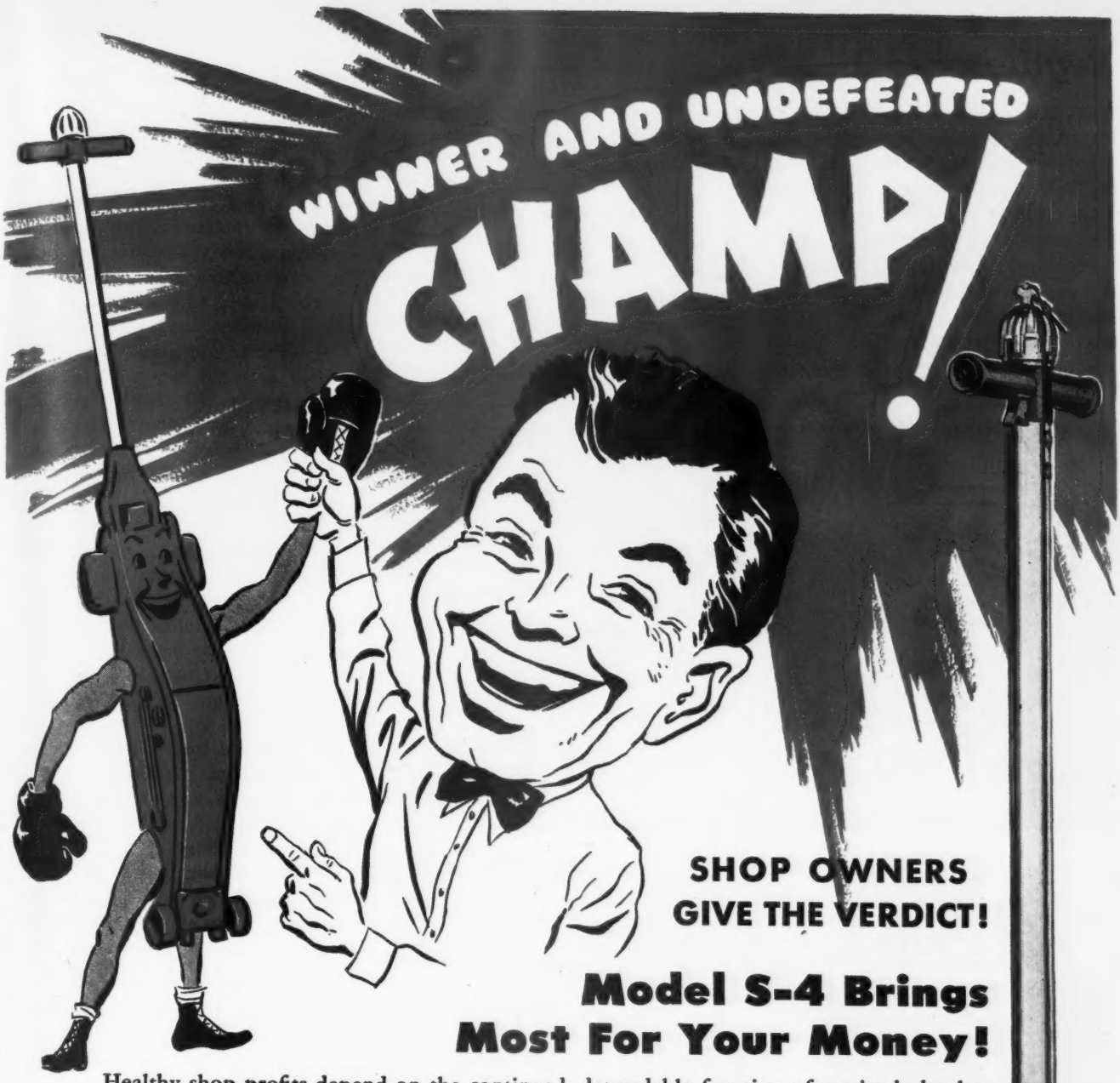
Fig. 5 is identical to Fig. 4 except that the current regulator winding has been added. The contact points above the current regulator winding are normally held closed by the tension of a spring. However, when the generator output exceeds its rated maximum, the current regulator operates to protect the generator against overloading.

Let us study the current regulator action in more detail. As generator output increases, this output, which flows through the current regulator winding, causes an increasing magnetic field. When the output reaches the value for which the generator is rated, then the magnetic field is strong enough to overcome the current regulator armature spring tension which holds the contact points closed. The armature is pulled down and the contact points thus separated. This inserts the resistance into the generator field circuit so that the field current and thus the strength of the magnetic field in the generator is reduced. Generator output consequently drops off. This is reflected in a weakening of the current regulator winding magnetic

(*Continued on page* 98)







SHOP OWNERS GIVE THE VERDICT!

Model S-4 Brings Most For Your Money!

Healthy shop profits depend on the continued, dependable function of service jacks that can *always* jump to the job! That's why you should make very certain that you get an S-4! Compare its design and performance record with any other service jack or new post-war contrivance. See for yourself why the Blackhawk S-4 has won world-wide recognition as the outstanding Hydraulic Service Jack. Choose the jack that's a proven "champ." Place your order on file with your Blackhawk Jobber now. Yes, terrific demand may delay delivery to you — but the *extra value* is reason enough to *insist* on a Blackhawk!

***A Product of* BLACKHAWK MFG. COMPANY, Dept J647, Milwaukee 1, Wisconsin**

BLACKHAWK



Regulators . . . . . (*Continued from page* 96)

field: the regulator armature is released so the points close. Output increases and the points open as the above cycle again takes place. This cycle is repeated as many as 200 times in a second so that the current regulator limits the generator output to the value for which the generator was designed. The current regulator does not reduce the output below the rated maximum of the generator; it merely prevents the generator output from exceeding that value.

VOLTAGE REGULATOR

Fig. 6 is identical to Fig. 5 excepting that the shunt winding of the voltage regulator has been added. This winding consists of many turns of fine wire; it is connected across the generator so that generator voltage is always impressed upon it.

When this voltage reaches the value for which the regulator is set (which is the maximum under which the electrical system can safely function), the voltage on the voltage regulator winding produces sufficient magnetic strength to overcome the spring tension holding the voltage regulator contact points closed; they open and insert the resistance into the generator field circuit. Here again the effect is the same as when the current regulator contact points open; the voltage and current are reduced.

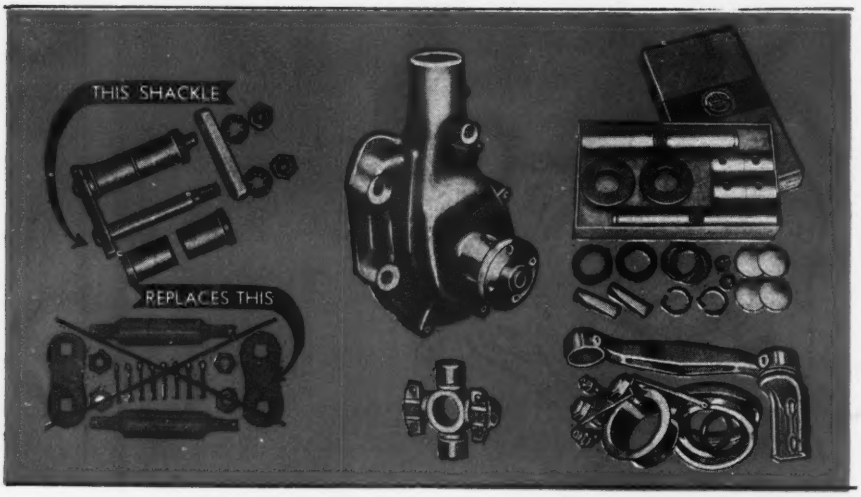
As the voltage drops off the magnetic strength of the voltage regulator shunt winding is reduced so that the voltage regulator contact points again close, allowing the voltage and output to increase. Here again a rapid vibration of the contact points takes place as they open and close as many as 200 times a second. This maintains the voltage at a more or less constant value.

In practical terms, the operation of the voltage regulator allows a relatively high output when the battery is low and causes a reduced generator output as the battery comes up to charge. This action makes use of the battery characteristic which makes it increasingly resistant to charging as it approaches a charged condition.

OPERATION OF REGULATOR UNITS

When the battery is low and electrical accessories such as lights or radio are turned on, the voltage

(*Continued on page* 102)



AMKO
Quality AUTOMOTIVE REPLACEMENTS

Original Equipment Quality!

● "CUSHION RIDE" TRADE MARK REG.
RUBBER SHACKLES
● WATER PUMPS
● KING BOLT SETS
● KNEE ACTION ARMS & KITS
● UNIVERSAL JOINT ASSEMBLIES

— and many other fast selling items. Write for Catalog.

●

Plants at Plano and Aurora, Illinois

SOLD THROUGH JOBBERS ONLY

We are now located in our own building at 570 West Fulton St., Chicago, where we have much larger quarters to give you still better service. We are concentrating our production in Chicago but still maintain our plants at Plano and Aurora.

AUTOMOTIVE MAN'F'G. CO., INC.
570 W. FULTON ST. CHICAGO 6, ILL.



"Oh, no you don't."

HARTMAN · · · THE INDUSTRY'S ONLY *Rapid* ELECTRICALLY HEATED CHEMICAL CLEANER



The Only Steam Cleaner Providing *All* These Advantages

Fully portable — 80 foot working area — inside or outside the shop

Triple-insured safety for operator and machine — no fire or explosion hazards

No smokestacks or flue — no dangerous fumes or vapors

Full-view operation — no large clouds of excessive ineffective steam

100% Efficient boiler reaches operating temperature in 60 to 90 seconds

Electrical heating keeps room temperatures low

Controlled-spray high pressure nozzle that eliminates dangerous splash-back

Beautiful compact cabinet to match the HR53-2 Rapid Charger

Occupies less than a two-foot square of floor space

Heavy 10" rubber tired wheels — swivel caster with tip-toe brake

Ask Your Jobber For Details!

AUTOMOTIVE EQUIPMENT
TIME PAYMENT PLAN

THE HARTMAN CORPORATION OF AMERICA

If it's a HARTMAN *it's the best*

6417 MANCHESTER • ST. LOUIS 10, MO.



First in performance... First in popularity—that's LEAK-PROOF! Especially designed to work as a set, LEAK-PROOF Piston Rings do a *complete* job—the kind of job good garagemen are proud to turn out. Try LEAK-PROOF. They'll be First with you, too!

A NEW PRODUCT OF McQUAY-NORRIS

FIRST NAME IN PISTON RINGS

GUARANTEED TO DO ALL 4



Yes GUARANTEED

. . . guaranteed to give satisfactory performance for 10,000 miles or one year, whichever shall occur first, under the McQuay-Norris LEAK-PROOF Piston Ring Replacement and Labor Guarantee available upon request.

MANUFACTURING CO. ST. LOUIS 10, MO.

Regulators . . . . . (*Continued from page* 98)

will not increase sufficiently to cause the voltage regulator to operate. Under this condition generator output will continue to go up with increasing speed until it reaches a value sufficient to cause the current regulator to operate. The current regulator then prevents any further increase of output which would overload the generator.

As the battery approaches a charged condition and accessories are turned off, the voltage will increase. It soon reaches the value at which the voltage regulator begins to function. As the voltage regulator begins to operate, it tapers the output down so the current regulator stops operating. The voltage regulator then permits the generator to supply just the amount of current needed by the battery and connected electrical load so that battery overcharge and high voltage are prevented.

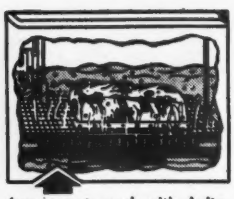
REGULATOR SERIES WINDING

Fig. 7 is identical to Fig. 6 except that the series winding has been added to the voltage regulator so as to make the circuit complete and bring it into line with that shown in Fig. 2. This added winding, which carries field current when both sets of regulator contact points are closed, is merely a helper winding to help speed up the action of the voltage regulator contact points. When both sets of points are closed, the field current flowing through the series winding adds some magnetism so that the voltage regulator contact points open more rapidly. As they open the series winding magnetic field collapses (because field current stops flowing through it) so that the voltage regulator contact points close more quickly.

In our next article we will discuss the quick checks that can be made when generator or regulator trouble occurs so you can quickly isolate the malfunctioning unit. Subsequent articles will then take up the servicing and adjustments of the generator and regulator.

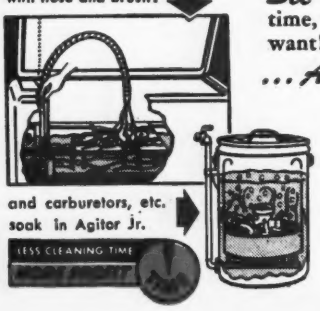


Gray-Mills Jobbers are now ready to give you an actual demonstration –in their stores–of this complete AGITOR PARTS CLEANING SYSTEMS



Large parts soak with Agitation while...

Small parts are being cleaned with hose and brush.



and carburetors, etc. soak in Agitor Jr.

LESS CLEANING TIME

See how you can use the entire tank for agitated soak cleaning of large parts like crankcase pans, (no heating required).

See how you can clean small parts at the same time, with flowing solvent. Here is the utility you want!

... And see how the new Agitor Jr. simplifies and speeds cleaning of carburetors and other parts requiring Speed-Agitene Solvent for carbon and varnish.

See your Jobber...or send for descriptive catalog

GRAY-MILLS CORPORATION

AGITORS • AGITENE SOLVENTS • PUMP UNITS

1943 Ridge Avenue • Evanston, Illinois

C. V. C. Circuit Breaker

C. V. C. Industries, of Tulsa, Oklahoma, are producing a new unit called the C. V. C. Circuit Breaker. Featuring "Controlled Volume Contact," this circuit breaker, the manufacturer claims, will not pit, burn or oxidize and is not susceptible to point bounce. They also state it achieves 90 per cent coil saturation, a 10 per cent increase in gas mileage and a 15 per cent increase in horsepower.

On a six-lobe cam, the points on the C. V. C. circuit breaker are closed 52 degrees and open 8 degrees. To avoid point bounce, it uses a coil spring with pounds pressure. This spring operates a plunger, giving a straight in and out piston action. Since, according to the maker, the circuit breaker is closed 90 per cent of the time, maximum efficiency is obtained by eliminating point bounce and insuring maximum coil saturation.



U.S.

FULL HYDRAULIC DRIVE-ON LIFTS SAFELY HANDLE YESTERDAY'S TODAY'S AND TOMORROW'S CARS

Ancient jalopies or super '47 models right off the line—the broad inviting runways of U. S. Full Hydraulic Drive-On Lifts take them both with equal ease. No spotting required—permanent stops at one end, plus completely automatic fool-proof chocks at the other, permit full use of flat wide runways with complete safety. Thoroughly tried and tested in all parts of the world, you can always depend upon U. S. Lifts for years of hard everyday use.

U. S. Lifts (both Drive-On and Free-Wheel types) are sturdily constructed for extra strength and rigid stability—with all underneath parts of a car within easy reach of the operator. Exclusive safety control features make them both safe—and easy to operate.

Send for catalog on complete line of U. S. Lifts

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AIR COMPRESSORS
HYDRAULIC LIFTS
LUBRICATING EQUIPMENT
Products of the World
THE UNITED STATES AIR COMPRESSOR CO. CLEVELAND, OHIO

The UNITED STATES AIR COMPRESSOR Co.

5300 HARVARD AVENUE • CLEVELAND 5, OHIO

AIR COMPRESSORS • HYDRAULIC LIFTS • LUBRICATING EQUIPMENT

Inspection Is a Must . . . (*Continued from page* 36)

are obvious advantages for both systems, and in either instance the motorist is ultimately the winner.

Eighteen states now require periodic inspection of vehicles seven more have empowered their respective cities to run inspections, and many of the remaining states are at the present time writing inspection regulations.

Most safety councils place inspection high on the list of methods of helping to reduce our growing national accident rate. And the seriousness with which the situation is studied by reputable organizations is exemplified by the action of the NADA at this year's convention when the group resolved to develop a safety program "in which all dealers, as individuals, as dealer associations, and in cooperation with other groups, could participate to reduce the number of traffic accidents on the highway."

The city of Evanston, Illinois, has been a leader in public safety since 1932. Before the war this city had a modern inspection system which had to be discontinued during the war because of a manpower shortage. But the citizens remembered the "good old days" and public demand last year was so great that periodic inspection has now been resumed. The completely new testing station is housed in a Quonset hut.

"The test station," declared Lt. Frank M. Andrews, head of the police department traffic division, "represents the country's most up-to-date means of preventing automobile fatalities, injuries and financial losses due to mechanical defects—and to human procrastination in discovering and correcting such defects. The station and its equipment is the result of 14 years development, beginning with establishment of our safety program in 1932." Evanston has won 11 safety awards in 14 years, and in the last two years only four persons were killed in Evanston traffic crashes. Certainly periodic inspection has paid off here. The total cost of both Quonset building and equipment incidentally was only about $26,000.

The State of New Jersey also has an exceptionally successful system of inspections. Twice a year the motorist is required to take his car through a modern testing sta-

(*Continued on page* 108)



HERE'S A NEW DISC YOU'LL RAVE ABOUT TOO

SPEED-WET *

Veteran body-men don't usually "rave" over a new sanding disc, but a lot of them are saying some awfully nice things about the new Speed-wet Disc—and they all seem to like it. Our field test men report statements like these from top body men: "Boy, that grit is sure on," and, "You can't kill that disc." The average comment is that the new Speed-wet Metalite Fibre Disc "is superior to any disc they have ever used."

Well, they ought to be good. They are improved three ways—all resin bond—all fibre backing—all "Durabonded"* coating. To a veteran disc man, these features mean high heat-resistance, rugged grit-anchorage, great flexing-strength and tremendously increased cutting life. If you haven't yet tried the new Speed-wet Metalite Fibre Disc, ask your Jobber to furnish them with your next order.

* *Reg. U. S. Pat. Off.*



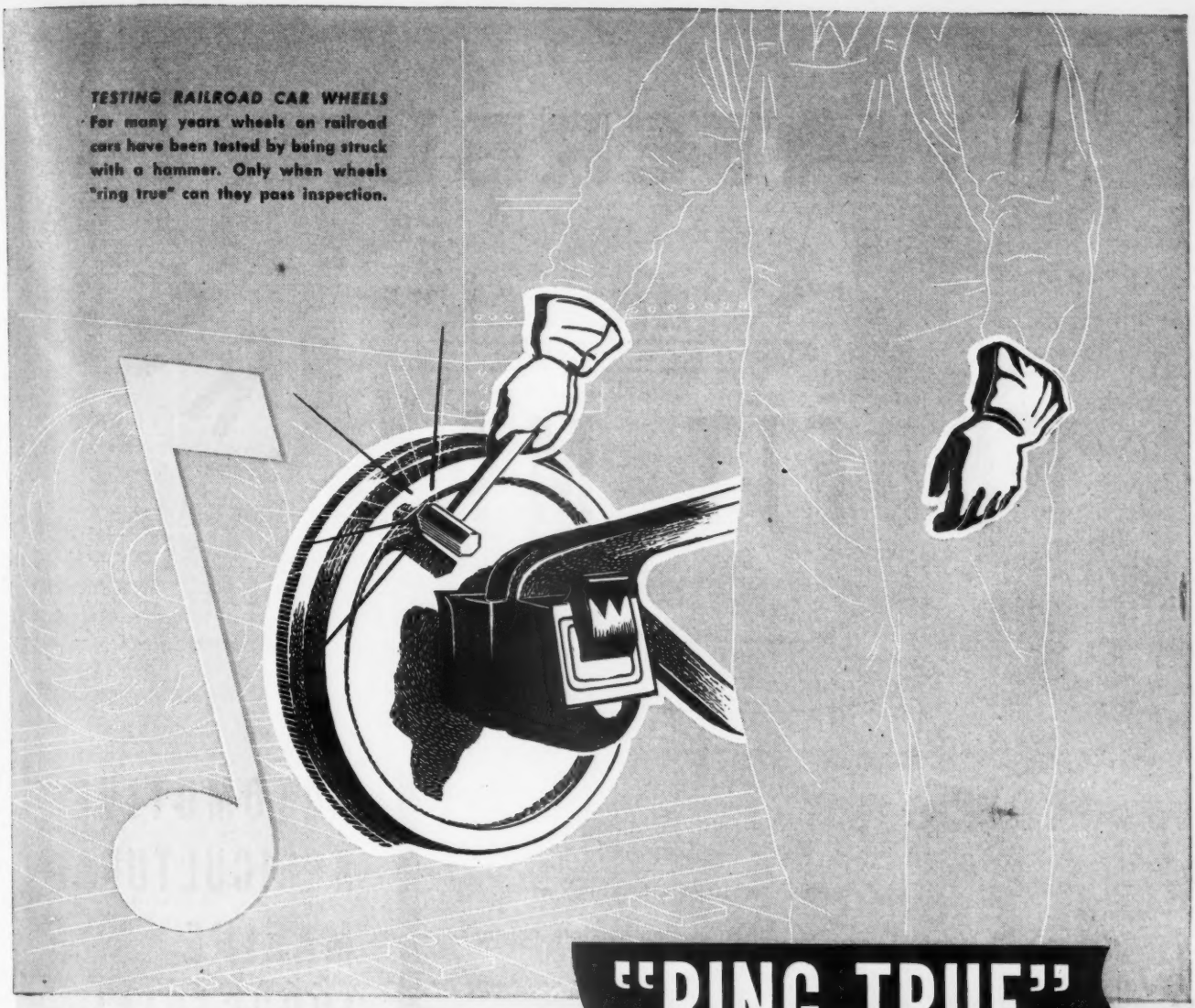
BEHR-MANNING

(DIVISION OF NORTON COMPANY)

TROY, N. Y.



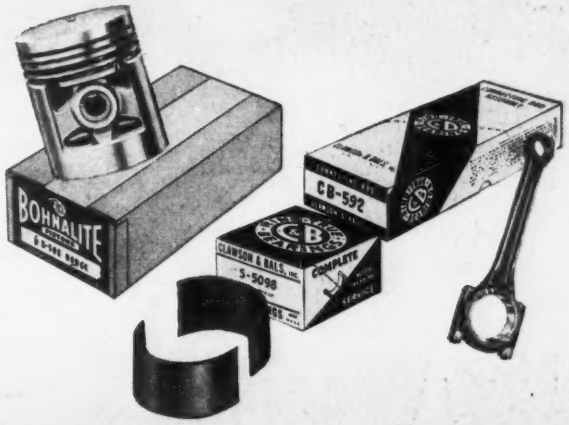
"Yeah, I worked in a filling station once."



"RING-TRUE"

IN AUTOMOTIVE PRODUCTS, TOO, "RING-TRUE" MEANS THE FINEST

Check your needs for automotive parts now against this complete listing of the "Ring-True" line of Clawson & Bals: Engine Bearings . . . Reconditioned and Rebabbitted Connecting Rods . . . *Bohnalite* Pistons and Pins . . . Hydraulic Brake Parts . . . Hydraulic Brake Hose . . . Whip Ends . . . Water Pumps . . . Water Pump Repair Kits . . . Spring Shackles . . . and Flexible Hose Assemblies for gas, oil, grease and vacuum lines. If it's "Ring-True," it's the *finest!* Clawson & Bals, Inc., 2508 S. Michigan Ave., Chicago 16.



Genuine RING-TRUE PRODUCTS

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Really Complete Engine Bearing and Connecting Rod Service . . . Branches in Principal Cities

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Simplicity
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PROFIT MAKERS



For precision machining of
all internal combustion engines
in the following fields . . .

AUTOMOTIVE
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WATERBURY TOOL Division of VICKERS INCORPORATED, WATERBURY 91, CONN.

YOU CAN'T OVERLOOK
WATERBURY "BUILDER-UPPERS"
For Outstanding Performance For Greater Profits

CYLINDER REBORER AND GRINDER. Cylinder reconditioning authorities agree that the WATERBURY-Simplicity method of reconditioning cylinders . . . boring and grinding . . . is still the most dependable method. WATERBURY-Simplicity rebored and reground cylinders are finished to the necessary degree of smoothness so essential to the efficient performance of high speed, high compression motors of today.

PISTON TURNING & GRINDING MACHINE features exclusive indicator camming device. Machine can be set to handle variety of camming jobs by simply indicating size desired. No cams to lose and no time lost in changing cams.

CON-ROD BORING MACHINE the only twin-head machine built that will bore, face and cut oil grooves without changing tools or recentering rod. Handles all shell bearings perfectly.

CON-ROD REBABBITTING JIGS for high production for connecting rods. Electric heating element. Locking device holds die securely in position with perfect alignment.

Fully illustrated folders on all WATERBURY-Simplicity motor rebuilding equipment available on request along with name of your nearest jobber.



CYLINDER *Reborer and Grinder* **Model S**

PISTON *Turning and Grinding* **MACHINE**

CAPACITY
8" in length
7" in diameter

TWIN-HEAD *Con-Rod Boring* **Machine**

CAPACITY
Rods 1½" to 4" diameter
Max. 24" length

CON-ROD *Rebabbitting* **JIGS**

CAPACITY
1½" to 2½" and 1½" to 4" dia. 4" and 5¼" wide.

WATERBURY TOOL
Division of Vickers, Incorporated
280 EAST AURORA STREET
WATERBURY 91, CONNECTICUT

Inspection Is a Must . . . (*Continued from page* 104)

tion equipped with precision testing devices manned by trained inspectors. Here the lights, brakes, steering gear, front end, tires, windshield wiper and horn area examined, and if the car is in safe operating condition it is given a sticker and sent on its way. If a mechanical defect is discovered, the driver is told to get the proper repair work done and to report back for a recheck in 10 days. He then goes to a repair shop of his own choosing and has the work done there.

This system has several advantages to the motorist, to the shop owner and to the manufacturer of testing equipment. The motorist knows that his car is being given a scientific precision check up free from the personal interest which is sometimes found in the politically appointed repair shop system. The shop owner who is not favored (with an inspection license) knows that he still has a fair chance to keep his own customers and to get some new ones. The manufacturer of testing equipment knows that his equipment is being used as it was designed to be used, by competent adequately trained operators.

Both the traffic officials of New Jersey and the majority of the people of the state are strongly in favor of periodic inspections. Although statistics on accidents cannot of course, be broken down into those caused by mechanical failure and those caused by careless drivers, the State Police believe that periodic inspection is a must in any program which attempts to reduce highway hazards.

Too many factors influence the final figure to permit of most statisticians putting much stock in a detailed analysis of accident statistics. The percentage of accidents caused solely by mechanical failure is naturally very small. Complete mechanical failure at exactly the wrong instant could not be common. However, the percentage of accidents assigned to other causes, but in part attributable to the car not being in top condition is very large.

Speeding has long been held up

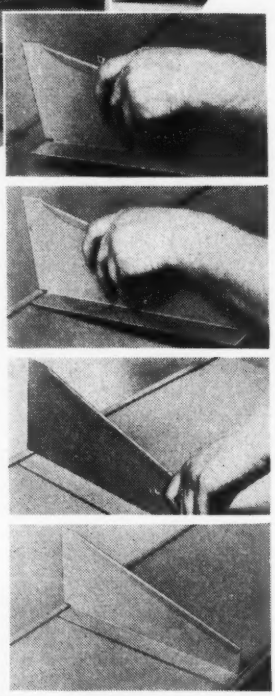
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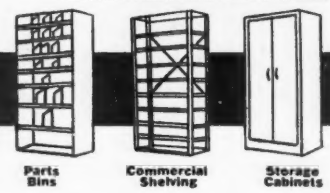
Hope metal bins offer quick, orderly expansion of parts departments because of these and other outstanding advantages:

- Patented slip-in dividers.
- Front and rear support at base keeps out dirt—bin won't sway or tip.
- Bins shipped built up to car manufacturers' specifications —ready for immediate use.

The many special features of Hope Metal Bins make them a favorite in parts departments of leading auto dealers everywhere. Write for folder, prices and early delivery date.

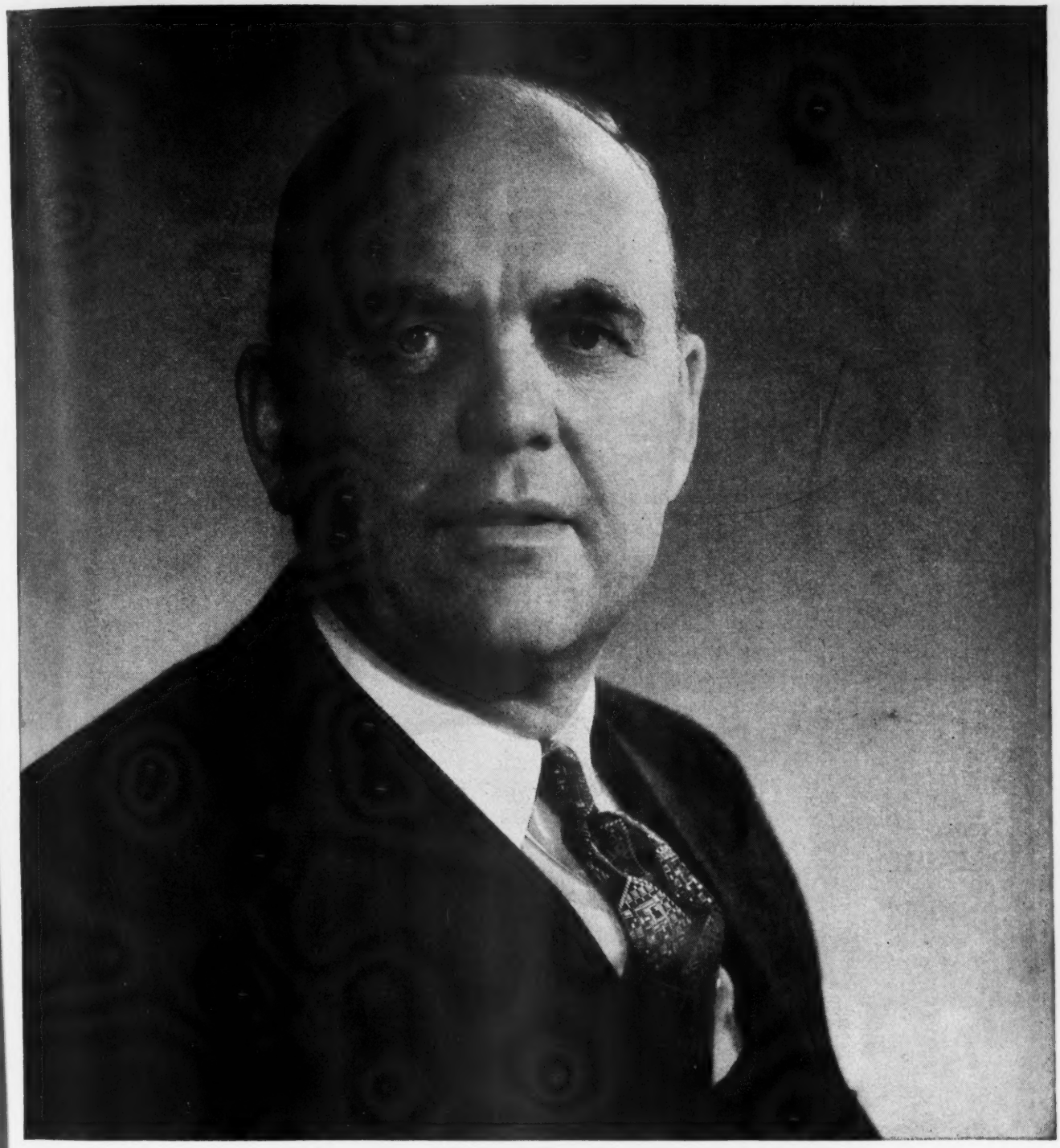


HOPE
METAL PRODUCTS, INC.
1507 ROCKWELL AVE.
CLEVELAND 14, OHIO





"You wouldn't try to rush me, would you? It was only promised two days ago."



"Clell" Forsythe, Dodge Dealer, Syracuse, N. Y.

"When I try to put the value of the Dodge dealership in a few words I'm stumped. There are so many things, including the Dodge factory people, that make this dealership ideal, I'd need a book to tell the whole story.

"From a standpoint of selling vehicles and service, however, the simple net of it is that Dodge and Plymouth cars blanket more than seventy-five per cent of the entire automobile market, with Dodge *'Job-Rated'* Trucks completing the picture blanketing the entire Truck field.

"It's the only dealer account like it in the automobile business, with everything coming under a single sales and service agreement, written from the dealer as well as factory point of view."

• • •

DODGE • PLYMOUTH • DODGE "Job-Rated" TRUCKS

DODGE—DIVISION OF CHRYSLER CORPORATION
7900 JOS. CAMPAU, DETROIT 11, MICH.

Inspection Is a Must . . . (*Continued from page* 108)

by the writer on highway safety as the chief cause of the nation's traffic deaths. However, speed is here to stay. But it must be emphasized that speed and reckless or incompetent driving are separate things. As speed increases, control of the car becomes more and more important. The desire for speed, the desire to get places in a hurry, is the basis for progress in any transportation industry. Thirty years ago automobile travel on the public roads was supposedly checked by a fifteen mile speed limit; twenty years ago a thirty mile limit; ten years ago a forty-five mile limit; and today many highways have a fifty-five mile limit. Roughly a mile and half per hour is added to the country's "safe, dependable transportation" on the highways each year. And Caspar Milquetoast is not the man who does it. When we stop raising the average speed of the average motorist either the millenium is at hand of another form of prohibition has been chained around us. The one we can't count on, the other we don't want. So the break-neck speed of today will continue to become the safe speed of tomorrow.

Because in all progress there is an element of danger, any reasonable safeguards which we can take to reduce the hazard is essential. Improvement in highway design and construction and in automotive design and construction are important steps which look toward the future. So does teaching beginners to drive correctly. Adequately intelligent policing of the highways reduces the number of reckless and drunken drivers (still one of the worst and most criminal causes of accidents). But one more safeguard is necessary. Americans are notorious putter-offers, and as long as the old bus runs, they are apt to keep on using it. Periodic inspection is the benevolent force which most of us need to make us do today what we would like to put off till tomorrow. High speed all-weather driving, however, demands a skilled driver *and* a car in good condition; for just as a workman is no better than his tools, so is a driver no better than his car. And a botched job by a driver is apt to be his last.

It is up to the real professional in this game—the car dealers, the repair shop men, the jobbers, the men who know cars best—to convince the motorists of the country what they have known for years. A car which is kept in top condition is in the long run cheapest to operate, and safest.

Johnson Bearings

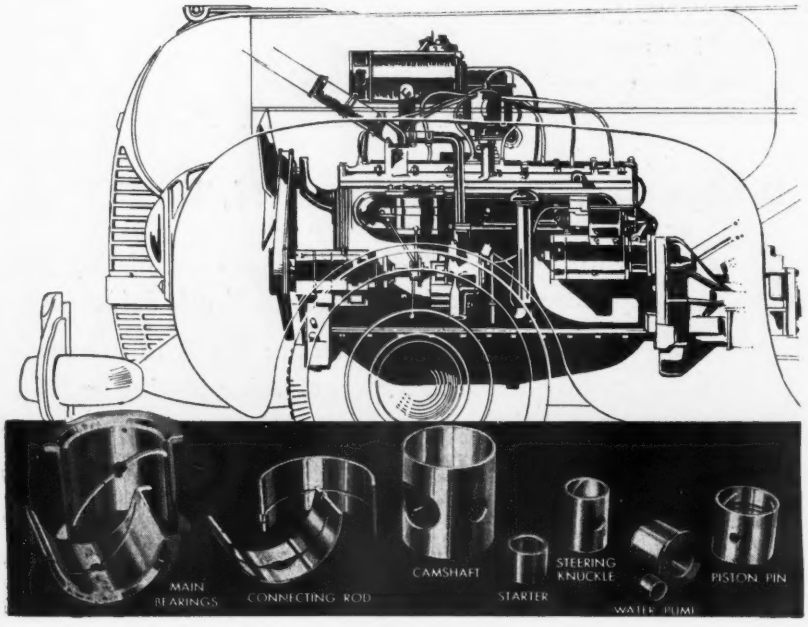
for Service *and* Economy

You save TIME and MONEY in many ways when you buy, sell or install Johnson Bronze Bearings. Every item in the line is correct in design, alloy and tolerance. Thus they slip right into place with a minimum of effort. Once installed they deliver the maximum in smooth, quiet performance. The range of sizes and types is complete for all leading makes of cars, trucks and buses. Why not try Johnson on your next order? See for yourself the extra values you gain. Reasonably good service is now available from stocks.

New CATALOGUE

Lists and describes a complete bushing and bearing service for leading cars and trucks. Write for your FREE copy.

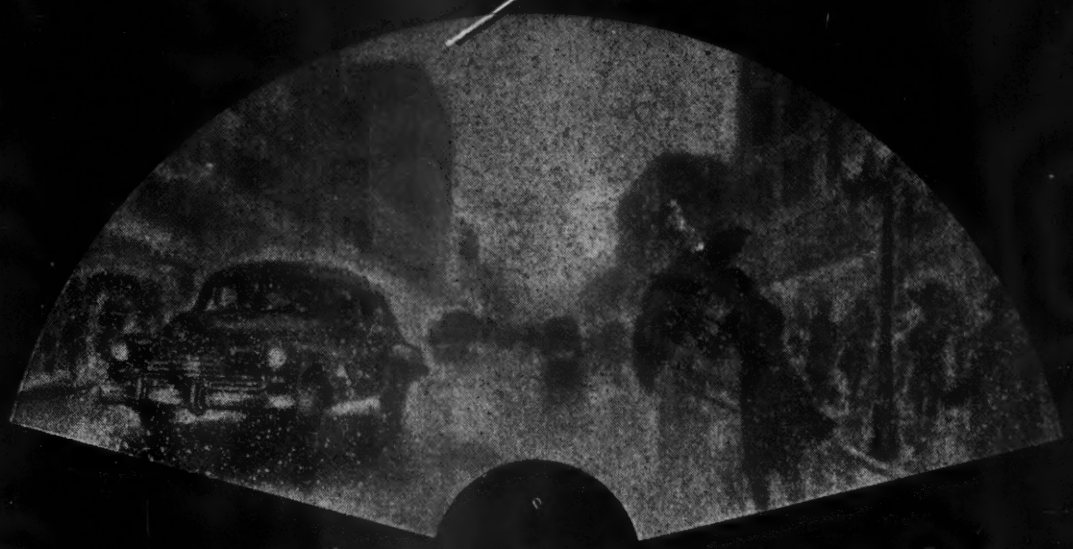
JOHNSON BRONZE COMPANY
455 So. Mill Street New Castle, Pa.



Costs and Prices of Automotive Batteries Rise

Though prices of automotive batteries have increased during the past several months as high as 62 per cent over prices in 1941, it has been revealed by The Association of American Battery Manufacturers that some costs have soared as high as 121 per cent.

Every time windshields look like this...



...it means More Sales for Trico's two little *Squirts*



The Trico Automatic Windshield Washer squirts two jets of water on your windshield...your wiper blades swing...and off goes blinding road splash, muddy mist, dirt and grime. Easily installed on any car or truck, new or old.

...they wash windshields while you drive

● Trico Windshield Washer advertising regularly is reaching many additional millions in 1947...through the Saturday Evening Post, Life, Time, Country Gentlemen and other national magazines. At $6.25 (plus installation) the Trico Washer is one of the year's fastest selling accessories.

TRICO

Automatic Windshield Washers

Trico Products Corporation, Buffalo 3, New York

New Packard . . . . . (*Continued from page* 48)

transmission used is of the Packard Unimesh type, with nine ball and roller bearings, and can be fitted with overdrive, Electromatic drive, or both, at extra cost.

Front suspension is of the normal Packard independent type, but the specially-designed X-frame is used only on the convertible. There is Hotchkiss drive to a 3.9 to 1 rear axle.

Brakes are Packard Servo Hydraulic, self-energizing, with mechanical hand brake operating on the rear wheels. The disc wheels mount 7.00 x 15 four-ply tires.

Interior body fittings include an instrument board illuminated by "black light" which eliminates night glare and reflections; a plastic-covered steel steering wheel; and push-button windows, individually controlled and controllable by the driver. The doors are equipped with pull-to, no-twist handles. The top is made of a new fabric which includes rayon in its composition, and operates from a button.

The upholstery is of bedford cord and a war-developed plastic that has the look and feel of leather, but is claimed to have greater durability. The front seat is power-operated and rises as it moves forward. The front seatbacks swing aside to permit entry to the rear compartment. The "Refresh-Aire" system, Packard's air-conditioning unit, handles the ventilation through a series of built-in ducts.



New Missouri Factory For Orscheln Brake

The Orscheln Brake Manufacturing Company has completed a large, new factory in Moberly, Missouri, for the construction of the Orscheln Brake lever.

This brake lever, designed to replace conventional parking brake levers, on trucks, tractors and buses, uses the "over center" or "boomer" principle. That is, when the lever is pulled back to the "on" position brake pressure tends to lock the system tighter, making roll-off impossible. It can be fitted to any standard emergency brake system, and no adjustment or changes are necessary in the brake system itself. It incorporates an adjustment feature that works from the brake lever itself, a knob on the lever serving to take up wear.

Improved U-Bolt Nuts Announced by Gripco

Gripco Hexagon U-Bolt Hi-Nuts are an improved type self-locking nut being offered for trailer, truck, bus and car leaf spring fastenings, by the Grip-Nut Co., 315-U So. Michigan Ave., Chicago.

No cotter pins or washers are required with these nuts. A patented triangular deflection of the upper thread of the nut provides a positive friction locking action on the bolt threads. It can be used over again, and is not affected by oil, water or chemicals.

"The old days were never like this!"



Until recently, Jim never could get away from his paint shop for a little evening fishing. He worked long hours getting "spot repair" colors to match . . . soothing disgruntled customers . . . doing many of his "touch-up" jobs over.

Then he got wise to "Factory Packaged Colors!"

From then on, color matching became easy—and sure! For Martin-Senour's "Factory Packaged Colors" are scientifically mixed by color experts at the factory to the car makers' original specs. Mixing time's eliminated . . . jobs are easier to handle—and get out on time!

Here's all you do—find your colors, by make and model, in Martin-Senour's unique color catalog . . . phone your nearby NAPA Jobber . . . and get the colors you want—fast! For more fishing, and less work, remember "Factory Packaged Colors." The Martin-Senour Co., 2520 Quarry St., Chicago 8.

NAPA
National Automotive Parts Association
Assurance of Quality

Available Everywhere—Call Your NAPA Jobber



1. Exact color match to car makers' specs!
2. Eliminates mixing time!
3. Patented pour-top can prevents waste!
4. No comebacks—no headaches!
5. Easier to handle—jobs out on time!
6. Top quality—top beauty—top durability!

MARTIN-SENOUR *Automotive Finishes*

A BASIC NEW IDEA

THAT BUILT OVER A MILLION SALES

. . . and it's only the beginning!

A Ferguson Dealer Franchise means continuous sales—sales of tractors and implements now totaling well over a million.

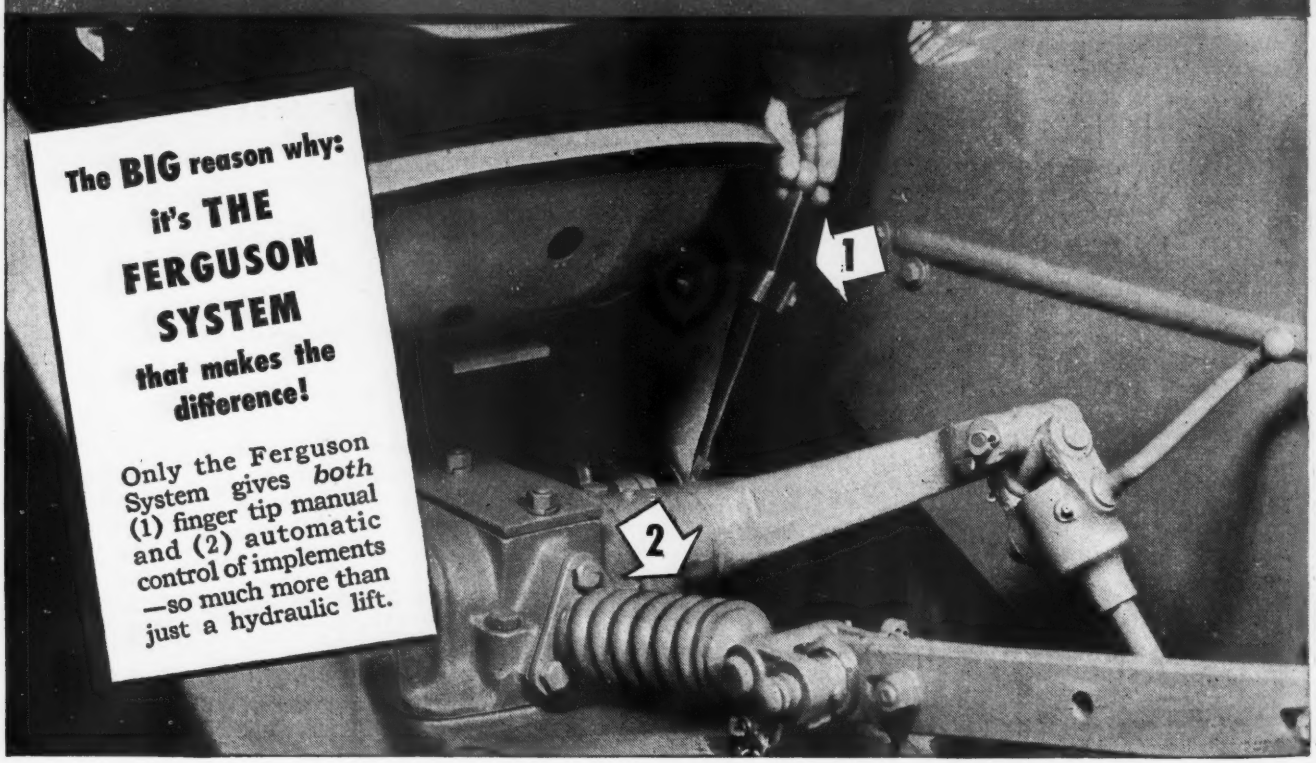
The Ferguson Dealer sells more—much more than just a power plant on wheels. He sells a basic new idea—a revolutionary new concept of power farming—a principle that now puts power farming implements under *complete control—both* manual and automatic.

The first sale to a user is only the *beginning*. Once a user discovers for himself the outstanding advantages he gains with the Ferguson System, he wants to extend that system to include all of his farm implements. And right there is the solid foundation on which the Ferguson Dealer has built tomorrow's profits.

The Ferguson Dealer is ready to supply the additional equipment users demand. Each implement is designed to function perfectly with the Ferguson System, and only the Ferguson Dealer can sell the profitable Ferguson implement line.

For complete details regarding the Ferguson Franchise, write Harry Ferguson, Inc., Detroit 3, Michigan.

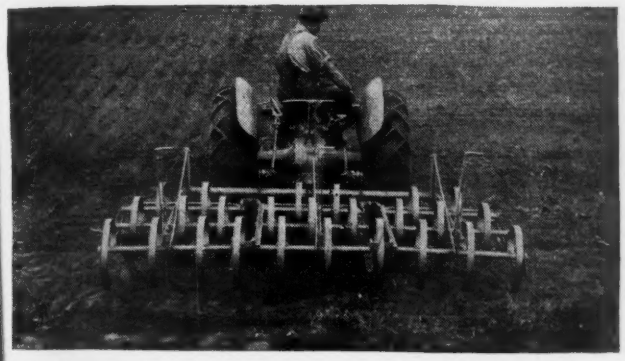
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THE FERGUSON SYSTEM



HERE ARE A FEW MORE IMPORTANT REASONS WHY IT PAYS TO BE A FERGUSON DEALER



Easy to Use. Implement operation is made easier than ever before with Ferguson System finger tip control and one-minute, 3-point attachment.



Saves Fuel. The Ferguson System automatically provides traction without excess built-in weight, and so reduces fuel costs.



Flexible. Wheel spacing easily and quickly adjustable without changing or adjusting the steering mechanism.



Ferguson Implements. A broad line of implements for both general and specialized farm needs.

FERGUSON DEALERS PROFIT THROUGH ALL-SEASON SELLING WITH SPECIALLY DESIGNED IMPLEMENTS

Plows	Corn Pickers	Weeders	Soil Scoops
Harrows	Combines	Planters	Trailers & Wagons
Offset Harrows	Feed Grinders	Grain Drills	Transport Boxes
Tillers	Saws	Mowers	Scrapers
Cultivators	Terracers	Sweep Rakes	Accessories

Legally Speaking

A lawyer's interpretation of federal and local court decisions of interest to repairmen and car dealers

"Freezing Out" a Dealer

Manufacturers and other distributors doubtless have the right to select dealers to whom they are willing to sell and even to appoint exclusive dealers in particular locations. But does a manufacturer or wholesale distributor have the right to enter into an agreement with a dealer's competitors to the effect that the manufacturer will sell the competitors but not the particular dealer against whom the agreement is directed?

That very vital question was raised in a recent Missouri case. That State, fortunately for the individual dealer, has a very effective anti-trust law. Discussing the combination against the complaining dealer, the court said:

"By the agreement the manufacturer and the other dealers agreed among themselves that the complaining dealer should be hindered in his business of buying and selling merchandise, thereby eliminating competition. Anyone may exercise a choice as to whom he will sell his goods, but he cannot enter into a contract whereby he binds himself not to sell, for in such instance he barters away his right of choice and destroys the very right he claims the privilege of exercising. After entering upon such agreement, he is no longer a free agent.

"It is argued that a person engaged in a private business has a right to buy from whomever he pleases, to sell to whomsoever he will, or to refuse to sell to a particular person. That right does not extend to an agreement and concerted action of such person with others similarly engaged, in a common design to destroy the business of another or to the making of an agreement forbidden by law and concerted action thereunder inflicting an injury upon the public. What the parties could have done individually, by independent action, is essentially different from what they might do collectively, pursuant to an agreement between themselves and a resulting concerted action."

The dealer in this case was thus protected by the court under the

(*Continued on page* 118)

SAYS THE MAN IN THE HELMET—



"Want an easy-working electrode? Then try this swell AIRCO No. 90 . . .

(AWS Classification E-6013)

"A kid can do a grand all-position job with this A. C. and D. C. electrode."

"It's a cinch to use in all positions and it produces fine-looking, uniform beads. Penetration is good but not too deep. That's why it's great for welding thin steel sections.

"Slag does not crowd the arc when welding in a vertical position from top to bottom. It gives ample coverage, yet it comes off easily.

"The arc has a forceful, spraying action which makes vertical and overhead welds easier. You can use plenty of current — either A.C. or D.C. — and the electrode won't deteriorate at the stub end."

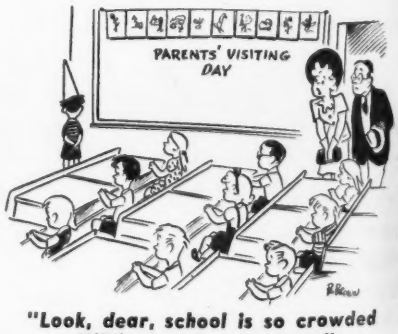
"FOR WELDING LIGHT-GAUGE STEELS use Airco No. 90-A. It's a honey for welding chrome-moly and similar aircraft steels and it's made in 1/16", 5/64", and 3/32" sizes."

Airco No. 90 and No. 90A conform to requirements of AWS Classification E6013. For full details on Airco's complete line of electrodes for every welding need — get in touch with your local Airco office and have them send you a free copy of Catalog No. 120. If you wish, address your request to the New York office, Dept. MG.

AIR REDUCTION

General Offices: 60 EAST 42nd STREET, NEW YORK 17, N.Y.
In Texas: MAGNOLIA AIRCO GAS PRODUCTS CO.
General Offices: HOUSTON 1, TEXAS
Offices in all Principal Cities
Represented Internationally by Airco Export Corp.

Weld with AIRCO ELECTRODES FOR BETTER WELDS AND EASIER WELDING



"Look, dear, school is so crowded Willie has to stand up."

Free! **WRITE WEATHERHEAD FOR LARGE PIN-UP POSTER OF THE GIRLS**



"This New Merchandiser certainly gets attention!"

Weatherhead **THE ORIGINAL EQUIPMENT LINE**



THE WEATHERHEAD COMPANY • CLEVELAND 8, OHIO

CLEVELAND • NEW YORK • DETROIT • CHICAGO • ST. LOUIS • ATLANTA • DENVER • LOS ANGELES

Legally Speaking . . .

(Continued from page 116)

State anti-trust law. In States having no such statute, however, it is possible that the court might similarly protect the dealer on the ground that such a combination in restraint of trade is considered to be contrary to the public interest. (*Reisenbichler vs. Marquette, 108 Southwestern Reporter, second series, 343.*)

This Picketing Is Legal

Repairmen may be startled to learn that their shops may be legally picketed in controversies other than labor disputes. Such is the decision of the New York courts.

The thing happened in the case of a meat market in which there was a "Kosher" poultry stand. The other meat sold in the market, however, was not "Kosher." An organization of Kosher butchers picketed the place with placards stating that the sale of Kosher poultry was no indication that the other meat sold in the place was Kosher.

The proprietor of the meat market petitioned the court for an injunction against this picketing, but the injunction was refused.

"The proprietor," said the court, "admits that he doesn't sell Kosher meat. There is weight in the argument that he opened a Kosher poultry department as a means of profiting from the business of unwary purchasers who might infer from the sign in the poultry department that the entire market sell Kosher meat. The placards giving this information to the public are absolutely truthful."

While this particular case arose in the meat trade, repairmen and businessmen in other lines may be affected by this concluding statement by the court:

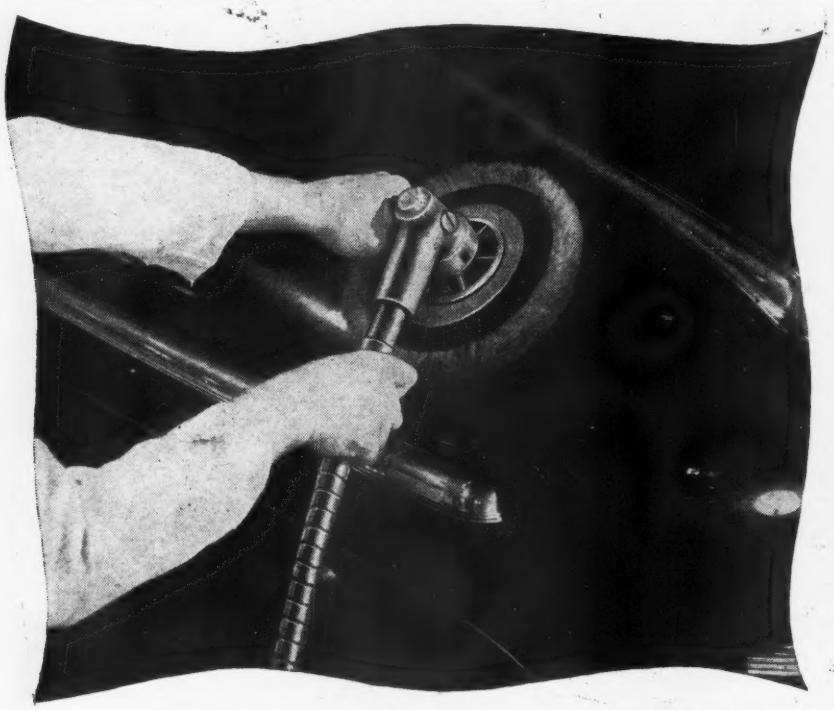
"The right of giving public information of this character in a forcible manner is not limited to labor disputes." The court then cited a number of legal authorities sustaining the right to picket in other than labor disputes. (*Rosman vs. United Strictly Kosher Butchers, 298 New York Supplement, 343).*

Warranty or Opinion

The legal distinction between a "warranty" in the sale of goods and a mere "opinion" expressed by the seller, is apt to prove troublesome when a customer subsequently attempts to rescind the sale and demands the refund of his money.

Ordinarily, any promise or assertion of a seller concerning the quality of the article sold, if relied upon by the buyer, and understood by both parties as an absolute promise or assertion, is considered in law as a warranty. The legal effect of a warranty is that if the goods do not "live up to" the promise or assertion made at the time of the sale, the buyer may repudiate the deal and demand his money back. In some cases also he may even sue the seller for any damage which he may have suffered as

(Continued on page 122)



For LASTING Satisfaction see haskins first!

● Not just today . . . not just tomorrow . . . but for years you'll get the tops in efficiency with Haskins Flexible Shaft Equipment.

Whatever your shop work—polishing bodies and fenders, sanding, or wire brushing, for instance—you'll find that Haskins machines pay for themselves time and again . . . with the performance you like . . . with the endurance you need.

Now, while you're thinking about it, get the facts on this precision-built, long-lasting, all-round shop tool. Write for the Haskins Automotive Equipment Bulletin. R. G. Haskins Co., 603 S. Washtenaw St., Chicago, Ill.



HASKINS RA-5 *Direct Drive Equipment; ½HP. 3450 R. P. M.; bench-height pedestal, 360° swing.*

HASKINS haskins FLEXIBLE SHAFT EQUIPMENT

NEW! FREE!

WRITE! get yours!



HERE'S YOUR NEXT JACK!

. . . and it's a honey!

Fitter than ever—improved in design and materials—born of million-jack experience in war and peace—tested and proved the hard way—each new Ausco Jack* is an automobile man's idea of what a top-flight jack should be like and what it should cost! Many of them are ready for delivery, the rest are coming fast.

Write today for your new Ausco Jack Catalog, get those orders in now for early delivery—be set with jacks to use or sell, at a profit either way! . . . AUTO SPECIALTIES MANUFACTURING COMPANY, St. Joseph, Michigan; Benton Harbor, Michigan; Hartford, Michigan; Windsor, Ontario, Canada.

Watch **AUSCO** *for the latest in Mechanical and Hydraulic* **Jacks**

Ausco trademark Reg. U. S. Pat. Off. ***Fully Patented**

2168



SOMETHING EXTRA

IN BRAKE SERVICE, TOO

PURITANIZE*

This is the season when your customers need that something extra in brake service—a *Puritanize job.

It's a wise service man who suggests flushing out gummy, dangerously dirty brake fluid and replacing with fresh at the end of the winter season. Wise on two counts—you are selling safety to your customer and you are adding a profitable extra to your sales.

Puritan Hydraulic Brake Flushing Fluid makes easy work of a Puritanize* job. It acts quickly and efficiently, leaving the brake line clean and ready for long-lasting, non-gumming Puritan Hydraulic Brake Fluid.

It's better for you to suggest a *Puritanize job than to have your customer go to somebody else for the emergency service a Puritanize* job might have avoided. Be sure to keep an ample supply of Puritan Hydraulic Brake Flushing Fluid and Puritan Hydraulic Brake Fluid on hand. Get both from your NAPA jobber today.

***PURITANIZE . . . TO BRAKE SAFETY**



1. Clean hydraulic brake line with fast-acting Puritan Hydraulic Brake Flushing Fluid.



2. Refill with non-gumming, all-"miscible" Puritan Hydraulic Brake Fluid.



PURITAN COMPANY, INC.

ROCHESTER 6, NEW YORK

HYDRAULIC BRAKE FLUID AND FLUSHING FLUID • GASKA-SEAL NO. 1, 2 AND 3 SHOCK AND KNEE-ACTION OIL

Thermoid Raises Wages

(*Continued from page* 54)

"Big Four" announcement is particularly significant in view of the fact that at the present time there is no union as bargaining agent certified at the plant. The company has been dealing directly with employees for the last year; the CIO Rubber Workers lost their bargaining rights a year ago, their position having been contested by the A F of L Chemical Workers International Union.

It was further pointed out in the letter that "while the 'Big Four' rubber companies influence the pattern for the industry, all of their Akron factories are and have been on a 36-hour per week basis with four shifts operating 6 hours daily, 6 days a week and with a surplus of employees available." The letter also states that "with a four-shift basis at the Thermoid plant and with around-the-clock operations in every department 6 days a week, it would have been possible to have granted an even higher wage increase—even though Thermoid's profits do not compare with those of the 'Big Four.'"

Michigan Auto Club Studies Auto Wear

Statistical evidence of the decrepit state of automobiles on the road is furnished by figures released recently by the Automobile Club of Michigan. In 1946, the Club made a new high of 575,006 emergency road service calls, of which 319,107 were "can't starts" resulting principally from battery, carburetor, and ignition troubles. Despite the fact that Michigan got its full share of the new cars built last year, the "can't start" listing was the highest on record. It has been increasing steadily ever since 1941, when it totaled 186,790, and was higher by nearly 2500 in January of 1947 than in January 1946.

The Club also reports that the increasing number of service calls for all types of trouble is not due to increasing membership. Records show the following number of calls per member for each year since before the war: 1941 and 1942, 1.25; 1943, 1.5; 1944, 2.5; 1945, 2.75; 1946, nearly 3.

Now's the Time *to* Stake your claim *in the* Biggest Service Market of All Time



YOU can take it straight from surveys—the next few years are going to be the *biggest years ever* for the automotive service business. That fact gives you an important decision to make. Are you going to "ride along" with the service set-up you have, or *are you going to "step out" and go after a real share of this rich market?*

Step Out with United Motors Lines

There's a ready-made, pre-sold market waiting for you when you "stake your claim" with United Motors lines. Take a look at them—*all original equipment on America's leading cars and trucks:* Delco-Remy Starting, Lighting and Ignition—Delco Batteries—Delco Hydraulic Brakes — Delco Radios — AC Fuel Pumps, Gauges and Speedometers—Delco Shock Absorbers—Guide Lamps—New Departure Ball Bearings—Klaxon Horns—Hyatt Roller Bearings—Harrison Radiators, Thermostats and Heaters—Inlite Brake Lining. These are the lines that bring you your golden opportunity in the big market ahead. If you're not handling one or more of them, *now's the time to start!* And if you're handling several already, *now's the time to add others and expand your business!* You're building for the future with any or all of these United Motors lines.

Plenty of "Push" Behind Them, Too!

When you take on United Motors lines, *you get what it takes to build a sound, permanent business.* You get experienced counsel on what lines are right for your set-up; individually planned sales and merchandising programs to help you sell; complete, up-to-date service information, and a customer-winning United Motors sign that's backed by consistent advertising in national magazines. All these plus-factors work to boost your business with United Motors lines.

Talk it over with your United Motors distributor—today! Or write us direct and we will arrange an interview for you.

UNITED SERVICE MOTORS

UNITED MOTORS SERVICE
DIVISION OF GENERAL MOTORS CORPORATION
GENERAL MOTORS BUILDING, DETROIT 2, MICHIGAN

Legally Speaking . . . (*Continued from page* 118)

a result of the warranty's not working out as promised.

Some courts and legislatures have gone so far as to say that any representation as to quality made by a seller at the time of a sale for the purpose of inducing the prospective buyer to buy and which does induce him to buy, amounts to a warranty.

A mere expression of opinion by the seller with respect to his goods, however, is not a warranty, and he is not responsible if they do not come up to the opinion which he expressed.

In explaining a mere opinion expressed by a seller, the Supreme Court of Texas said:

"A circumstance indicating whether a statement is a mere expression of opinion is whether or not its correctness is a matter of which either of the parties can judge as well as the other and upon which the buyer may reasonably be expected to have formed his own opinion."

A seller's praising of his goods is mere opinion, therefore, where it concerns something about which the buyer can just as readily form his own opinion. Again, the seller's superior knowledge of his goods is a factor, for as the Texas court points out:

"Superior knowledge of the seller in conjunction with the buyer's relative ignorance, operates to make the slightest divergence from mere praise into representations of fact effectiveness as a warranty."

In other words, it is fair enough for a seller to praise his goods legitimately, but when he goes beyond that to definite promises and statements of fact with respect to them, he is responsible if the customer can show that the goods do not comply with his promises and assertions. Incidentally, a seller is ordinarily not responsible for a breach of warranty where he sells an item under a trade-mark or trade name. *(United States Pipe and Foundry Company vs. City of Waco,, 108 Southwestern Reporter, second series 432.)*

Unfair License Tax

A Kentucky city had an ordinance requiring that "every person, firm or corporation engaged in the business of selling furniture, household goods or wearing apparel, on a strictly installment plan and operating a regular installment business—where the major part of the receipts are a result of the installment business—shall pay an annual license of $50.00."

Certain businessmen affected by this ordinance asked the Kentucky courts to pass upon its validity. Discussing the right of a city to impose such an ordinance tax, the Kentucky Court of Appeals said:

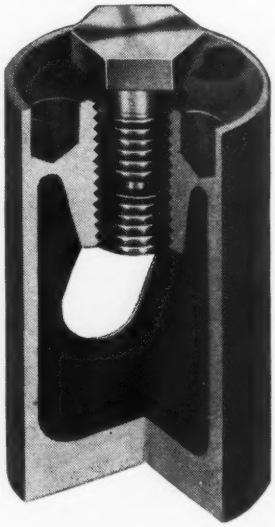
"A city may classify and subclassify trades, occupations and professions for the purpose of licensing them. So long as the tax operates equally upon all subjects within the class to which it is applied, it will be held valid.

(*Continued on page* 124)

there's profit in replacement!

WITH . . . *Johnson* TAPPETS

For FORD and MERCURY V-8's---
THE JOHNSON *adjustable* TAPPET:



You can't go wrong when you install this **JOHNSON** *adjustable* Tappet in Ford and Mercury V-8's (85 — 100 HP engines). You make more profit and gain more satisfied customers.

Special spanners are included with each set of tappets, leaving both hands free for quicker, more accurate adjustments . . . without fitting of valves and with cylinder heads in place. Once adjusted, the **JOHNSON** Self-Locking Tappet Screw maintains its setting and gives many thousands of miles of superior engine performance.

JOHNSON Tappets are designed and produced by "Tappet Specialists" . . . suppliers of tappets of all kinds to America's leading engine builders.

FACTORY-DUPLICATE TAPPETS ARE ALSO AVAILABLE FOR POPULAR MAKES OF CARS AND TRUCKS

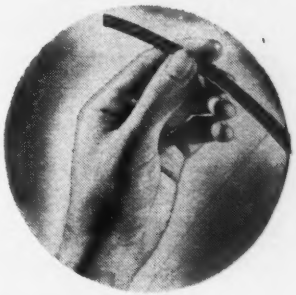
DISTRIBUTED TO N. A. P. A. JOBBERS
By BALKAMP of Indianapolis

CALL YOUR N. A. P. A. JOBBER TODAY

Johnson PRODUCTS INC.
MUSKEGON, MICHIGAN
"Tappets Are Our Business"

CRESCENT-WIRY JOE

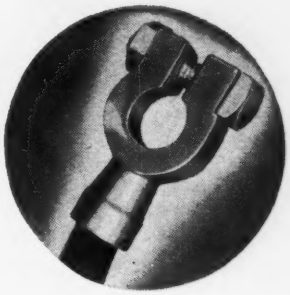
REMEMBER INTRODUCTION OF MAROON WIRE AND CABLE (A DISTINCTIVE CRESCENT-WIRY JOE PRODUCT)?





LATER CAME THE COPPER LUG, PRESSURE WELDED TO ELIMINATE SOLDERED OR BURNED AND FRAYED INSULATION.

THE HEAVY BRASS TERMINAL WAS ANOTHER STEP, THE FIRST AND ONLY TERMINAL TO BE ELECTRONICALLY SOLDERED.





CRESCENT-WIRY JOE LEADERSHIP WAS AGAIN DEMONSTRATED WITH THE SPOOLED CABLE DISPENSING BOX WHICH REALLY WORKS. A PACKAGING IDEA THAT SENT SALES SKYROCKETING!

THE NEW ART DESIGN SHOWN BELOW, A STRONG, ATTRACTIVE, METAL-EDGE PACKAGE FOR BATTERY CABLES, SPOOLED CABLE AND IGNITION SETS, CONSTITUTES LATEST STEP IN CRESCENT-WIRY JOE PROGRESS.



When next in our neighborhood stop in—see how Crescent-Wiry Joe Cable is made from bare copper to finished product in one plant, under one roof!

1947

TIRE REPAIR BUSINESS WILL BEAT ANY PRE-WAR YEAR . . and you'll get MORE than your share with . . . BOWES SEAL FAST

● In 1941 the motorist could get all the new tires he wanted . . . yet the tire repair business was *good.* Even with more new tires coming on the market in 1947, there still won't be nearly as many as before the war . . . so the tire repair business will be *even better.* Get more than your share of these profits by taking advantage of the biggest national advertising program in the entire field. Tie in with Bowes "Seal Fast" Tire Repairs and *insure* a prosperous 1947 for your business!



BOWES LECTROSEAL

Here is the way to tire repair profits! Compact, easy and quick to use, the Bowes "Seal Fast" Lectroseal wins and holds business for you. Put it to work NOW. Fits on your workbench.

Invite New Tire Sales by Giving GOOD Repairs!

● The fellow you've taken care of with *good* tire repairs will come to you for new tires. Take care of your customers' old tires with Bowes "Seal Fast" Tire and Tube Repairs . . . and you build a customer confidence that can't fail to bring you extra profits in new tires. The Bowes way is the business-winning way!

BOWES "SEAL FAST" CORP., INDIANAPOLIS 7, INDIANA

Legally Speaking

(*Continued from page* 122)

"Here is a classification of business according to the methods of operation—as between the method of ordinary merchants and the installment plan. The installment merchants are then divided between those merchants who handle everything but house furnishings and wearing apparel and those who sell those necessities. The general merchants are exempt. The second and limited class of merchants are taxed. No dealers in any other kind of merchandise than furniture or clothing, either in the ordinary or customary manner of cash and credit sales or on the installment plan, are subject to this license tax. Illustrative of the injustice and absence of uniformity and reasonableness, a merchant whose major receipts are from installment sales of jewelry, bicycles and other things and not having to pay the license tax, may be in business next door to a merchant selling furniture on the same plan who would have to pay the license. On the other side of him may be a merchant who sells furniture for cash or credit and on installments, but who would not have to pay such tax because less than half of his receipts are in installments.

"The singling out of the business of selling necessities for special licensing savors of iniquity rather than of reason. It is arbitrary and without a reasonable basis. The license ordinance is invalid."

This decision is representative of the general law on this subject. A city ordinarily cannot impose license and tax requirements against certain businessmen in an arbitrary and unreasonable manner. The law does not countenance licensing and taxation based on motives of local and political prejudice. Business may be classified for licensing and tax purposes, but only on a reasonable plan of classification, and all businesses within the taxed class must be treated uniformly and impartially. *(Commissioners of Sinking Fund vs. Weis. 108 Southwestern Reporter, second series, 515.)*



VACDRAULIC—the K H Superior Brake Power Booster!

One of the latest names to be added to the growing list of Kelsey-Hayes precision-made products is **VACDRAULIC,** the superior brake power booster that reflects Kelsey-Hayes "know-how" in its engineering, construction, and performance.

Here are some of VACDRAULIC'S superior features:

(1) ***A Sealed Unit*** — Vacdraulic is the only booster with all valves and other moving parts sealed in one rugged housing . . . safe from dirt, grease, and rough usage.

(2) ***Easier to Mount*** — Vacdraulic is a compact unit that connects only to the hydraulic line and intake manifold.

(3) ***Easier to Maintain*** — Once properly installed, Vacdraulic requires no lubrication or valve adjustments.

(4) ***Easier to Operate*** — Vacdraulic permits smooth, powerful braking action with the lightest *feather-touch* control.



Manufacturers and Automotive Distributors: Contact Kelsey-Hayes For Additional Information.

KELSEY-HAYES WHEEL CO. KNOW HOW DETROIT 32, MICHIGAN

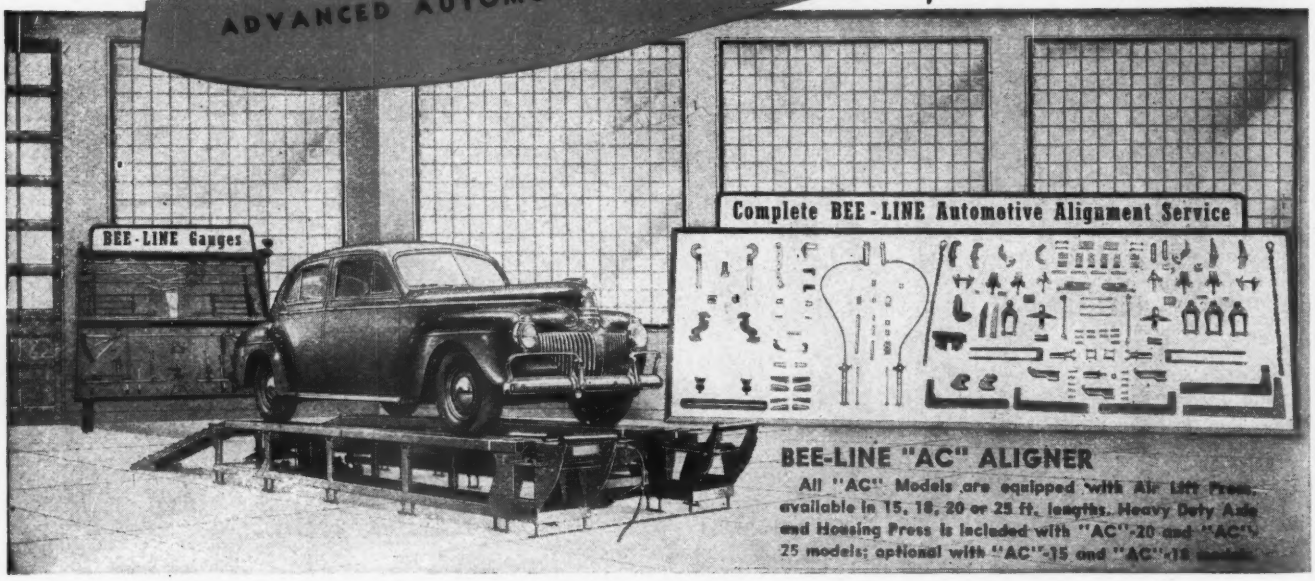
THE NEW UNIVERSAL

Bee Line

ADVANCED AUTOMOTIVE ALIGNER

Immediate Delivery

Featuring the NEW AIR LIFT



BEE-LINE "AC" ALIGNER

All "AC" Models are equipped with Air Lift Press—available in 15, 18, 20 or 25 ft. lengths. Heavy Duty Axle and Housing Press is included with "AC"-20 and "AC"-25 models; optional with "AC"-15 and "AC"-18 models.

New Truck Wheel Balancer

Priced at less than $400.00—Save about $125.00 on a

BALANCER and SPINNER

The new Bee-Line Heavy Duty Truck wheel balancer is designed to dynamic balance wheels and brake drums on the SPINDLE of the truck.

POINT INDICATOR
Shows the exact location for placing the weights.

WEIGHT INDICATOR
Shows the exact amount of weight to be applied.

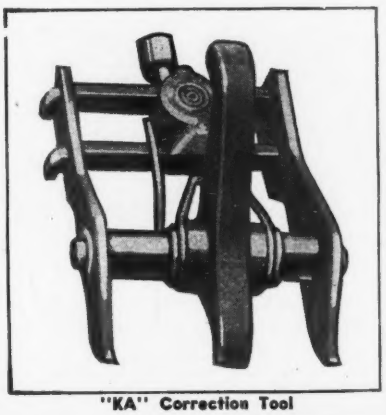
SAVES HOURS OF WORK
All balancing of wheels and brake drums is done on the spindle. The balancer is furnished with heavy duty, high speed wheel spinner for checking and balancing wheels at high speed.

Bee Line co.

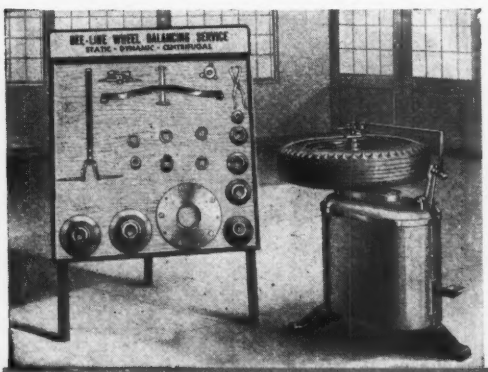
DAVENPORT, IOWA · U.S.A.

New Knee Action Correction Tool

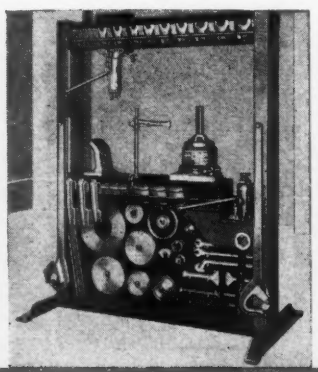
The new Bee-Line "KA" correction tool employs the three point bending method for increasing and decreasing camber on knee action cars and can be used for straightening spindles, steering arms, tie rods, drag links, pivot arms and many other correction operations. Equipped with a small 15-ton hydraulic ram which is removable from the correction tool and can be used for the straightening of box frames and other hard-to-get-at places.



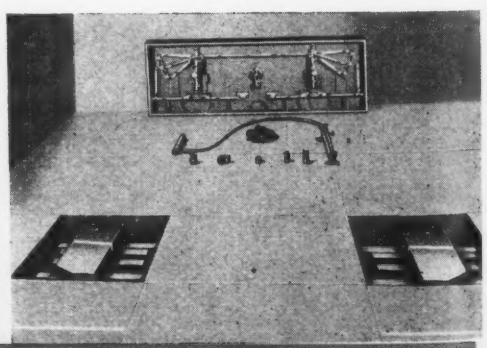
"KA" Correction Tool



BEE-LINE WHEEL BALANCER—It is built to balance passenger car tire including double tubes and retreads. All balancing is done from the center of the tire. The balance meter shows the exact location, amount of weight and side of tire to apply. All guess work is eliminated.



BEE-LINE WHEEL, HUB AND BRAKE DRUM STRAIGHTENER—The Universal Hub is an exclusive Bee-Line feature. Wheels, Hubs and Drums are mounted on shaft and centered with one operation. Practical time-saving tools are furnished for all tracing and straightening operations.



BEE-LINE FRONT END UNIT—New Beer type front end correction unit for servicing knee action passenger cars. It is equipped with 10-ton Porto Power, the new "KA" tool and front end alignment gauges.

Price $440.00 complete.

assembly can be built into a complete motor. In general, the parts required to make this change are cylinder head, oil pan, electrical units, manifolds.

The difference between a regular engine and a heavy duty engine is that the heavy duty engine has a larger cylinder bore. However, they are interchangeable.

Clutch Chatter

I have a 1940 P-10 Plymouth with less than 40,000 miles on it that has got my goat with a clutch chatter.

I have checked the motor supports spring shackles, rear end, and so forth and the transmission also has been checked. Finally a new B & B clutch plate was installed and I still have a bad clutch. If you can help me I'll be very pleased. —G. S., Corneth, N. Y.

After carefully reading the description you have given of the clutch chatter you are experiencing with a 1940 Plymouth, it seems you have checked all the usual points which might cause clutch chatter. In addition, I would suggest you check the clutch pressure plate and when you have the clutch down I would also recommend an examination of the face of the flywheel to make sure it is not scored or grooved in any manner and also that it is running true. This should be checked with a dial gage.

I think it would also pay to check the clutch shaft to make sure it is not sprung and also that the plate slides freely on the splines. Sometimes worn universal joints will cause clutch chatter and I think these should be checked also.



"Your move, Bert."

Water in the Oil Pan

I have a 1937 Dictator that leaks water into the oil pan. The owner has had several head gaskets put on. These didn't do any good so I got a chance to see what I could do. First I sent the head and had it planed, as it was warped some, and put on a new head gasket. It leaked so I took the pistons out and put the head back on to see where it was leaking and I could see that it was coming out at the gasket, so I took the head off and put two head gaskets on and that stopped it. I then reassembled it and let him have it. He has driven it about



Dependable . . .
in EVERY Detail

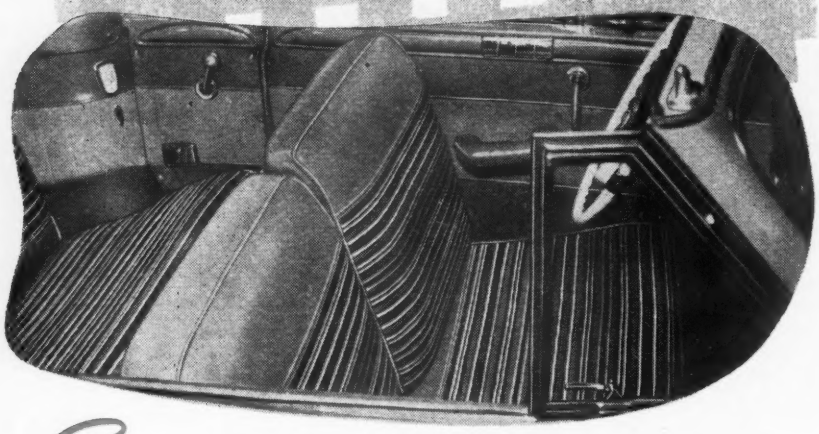
Backed by a 30-year-old reputation for quality, Niehoff Products are looked upon with confidence at home and abroad. From every standpoint they represent the best in ignition.

Today, because of their record of reliability, Niehoff Products are experiencing a greatly accelerated world-wide demand—a brilliant testimony to the Niehoff ideal to build dependability into every detail.

C. E. NIEHOFF & CO.
4925 Lawrence Ave., Chicago 30, Ill.
BRANCHES: 1342 S. Flower St., Los Angeles 15, Calif.,
250 W. 54th St., New York 19, N. Y.

NIEHOFF Ignition Products

Now BIG MONEY IN Seat Covers with this Revolutionary New Rankin Plan



Sensation

Exclusive saran **woven plastic** *covers (illustrated above) to retail at $34.95. Previously selling as high as $70 - $85! A ten-strike for alert jobbers and dealers NOW! Write today.*

Now you can sell de-luxe, custom-fitted seat covers . . . for no more than your competitor down the street charges for ordinary non-fitted covers. Volume sales, quality, fitted covers, at popular prices . . . that's the amazing new Rankin plan. And no chain store or catalogue house to undercut you! Here are the highlights:

IMMEDIATE DELIVERIES . . . for every make and model since 1936.

CUSTOM-FITTED, POPULAR-PRICED . . . Actually custom-tailored on each model car. Then volume-produced at POPULAR prices, to retail as low as $24.95.

TAILORED SMARTNESS . . . Most beautiful covers in America. New, saran woven plastics . . . smart plaids . . . full range of colors.

LONGER-WEARING . . . Every seam double-stitched with special, mildew-resistant thread. Extra reinforcing at points of strain. Additional concealed reinforcing in vital places.

DEALERS . . . JOBBERS! *Investigate this BIGGER PROFIT proposition NOW. Tear out this ad and write for the details TODAY!*

RANKIN MANUFACTURING CO.
Dept. R — Cedar Falls, Iowa

RANKIN Quality — The BIG New NAME IN SEAT COVERS

Clearing House

(*Continued from page* 127)

two weeks and it came back with the same old story. I tightened the head bolts according to diagram. Can you tell me what the trouble is?—Carl Corwin, Miller Missouri.

On your 1937 Dictator which has a bad water leak, I would suggest that you check the top of the cylinder block to make sure it is true, clean and not warped. I note you have had the cylinder head planed but it's not unusual to have the cylinder block warped and I would advise having this checked carefully. Also when assembling the cylinder head I would recommend you use a good gasket cement as this will undobutedly help materially in sealing any leaks.

Ford Bearing Trouble

I have a problem that I can't figure out and there isn't anyone around here that seems to know the answer. I have a 1934 Ford Coupe with a Mercury motor. Last spring I put in new rings, inserts and two new rods, besides grinding the valves. This job lasted about 300 miles. When I tore it down again, I found out that all the rods were burnt out and the inserts were shot. About the first of August we again put in new rings, bearings, inserts, clutch, checked the valves and new rods. This job lasted about 3000 miles. Today the inserts went out again. The oil pump is an 85 H.P. oil pump in the 100 H.P. motor. Why is it these inserts will not stay in this motor?

The inserts are .002 in. undersize. We had to have the rear main made and it fits good. The front and center mains fit good also. The pistons are .060. Please let me know about this as soon as possible. Could it be the oil pump?—Donald E. Harder, R.F.D., Oak Hill, Kansas.

In regard to the trouble you are experiencing with the Mercury engine which you are using in your 1934 Ford, it would seem to me the most likely cause of your trouble is the use of incorrect rod bearings. You state these bearings are .002 in. undersize. However, you

(*Continued on page* 130)



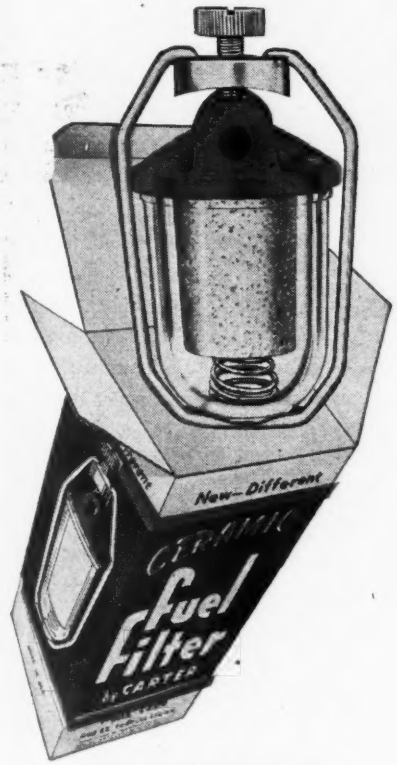
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It pays to protect your customers, as thousands of "Jims" do, against the annoyance of dirt, lint and other foreign matter in the carbureter.

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The scientifically designed filtering element made of specially prepared porcelain assures a steady flow of gasoline free from dirt, lint, and other harmful matter.

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neglect to say whether the ends of the rods had been bored out which would require an oversize on the outside diameter of the bearing shells. When buying engine shells for the Ford engine it is necessary to get two dimensions, one for where the bearing shells fit on the crankshaft and the other where the rods fit on the bearing shell.

You might also try a heavy-duty oil pump but I think the most likely cause of your trouble will be found in the rod bearings. The Pop O'Neill article in the March issue of MOTOR AGE deals in detail with this subject.

Points Burn Out Quickly

I am writing to see what you think might cause points to burn so quickly. I am mailing a pair that I just removed from a car after about 1000 miles of use. The voltage on the switch side of the coil was 8.1, on the point side 4. Is that about right? How can anyone remedy this condition?—W. W. Morrows, Brookfield, N. Y.

I have been studying the breaker points which you sent me recently and I am quite sure that you will find they were so badly burned as the result of either excessive voltage or a defective condenser.

I would suggest you install a new condenser and also set your voltage regulator in accordance with factory specifications. You did not mention the make car or generator but if you will check with the data provided in the MOTOR AGE Flat Rate Manual you will have no difficulty in setting the regulator at the correct value.

Condensation in Motor

How can I stop the 1940 Plymouth fuel pump round push rod that actuates the diaphragm from freezing? This pump has a small seal that seems to collect moisture very badly. I have cleaned the ventilator on the right side by the exhaust manifold, also the breather cap is new. The cylinders are in good condition, piston not over .003

(Continued on page 132)

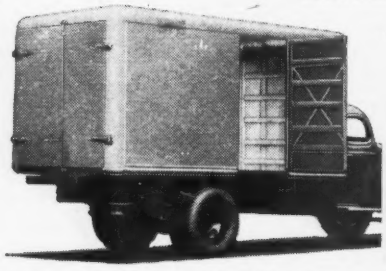
OLTMAN-O'NEILL *"Cargo-Tested"*

ALL-STEEL TRUCK BODIES

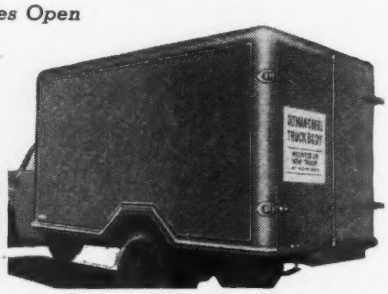
Mass Produced for Economy and Volume Orders

Dealer Franchise Available

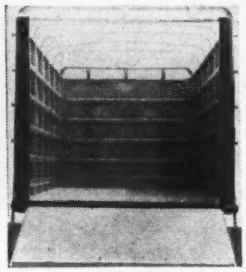
Oltman-O'Neill Company Still Has Some Choice Territories Open



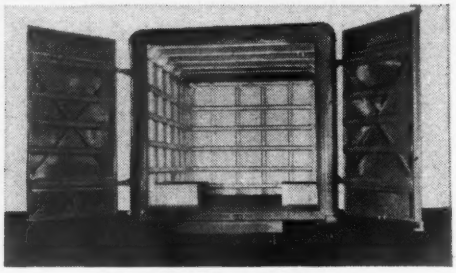
Standard Van with side door



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9-12-14-16 foot lengths . . . inside measure in Standard vans or Wheel House Models. Built to specifications for side doors, tailgates, double rear doors, or ¾ doors over tailgate, called "Dutch" doors.

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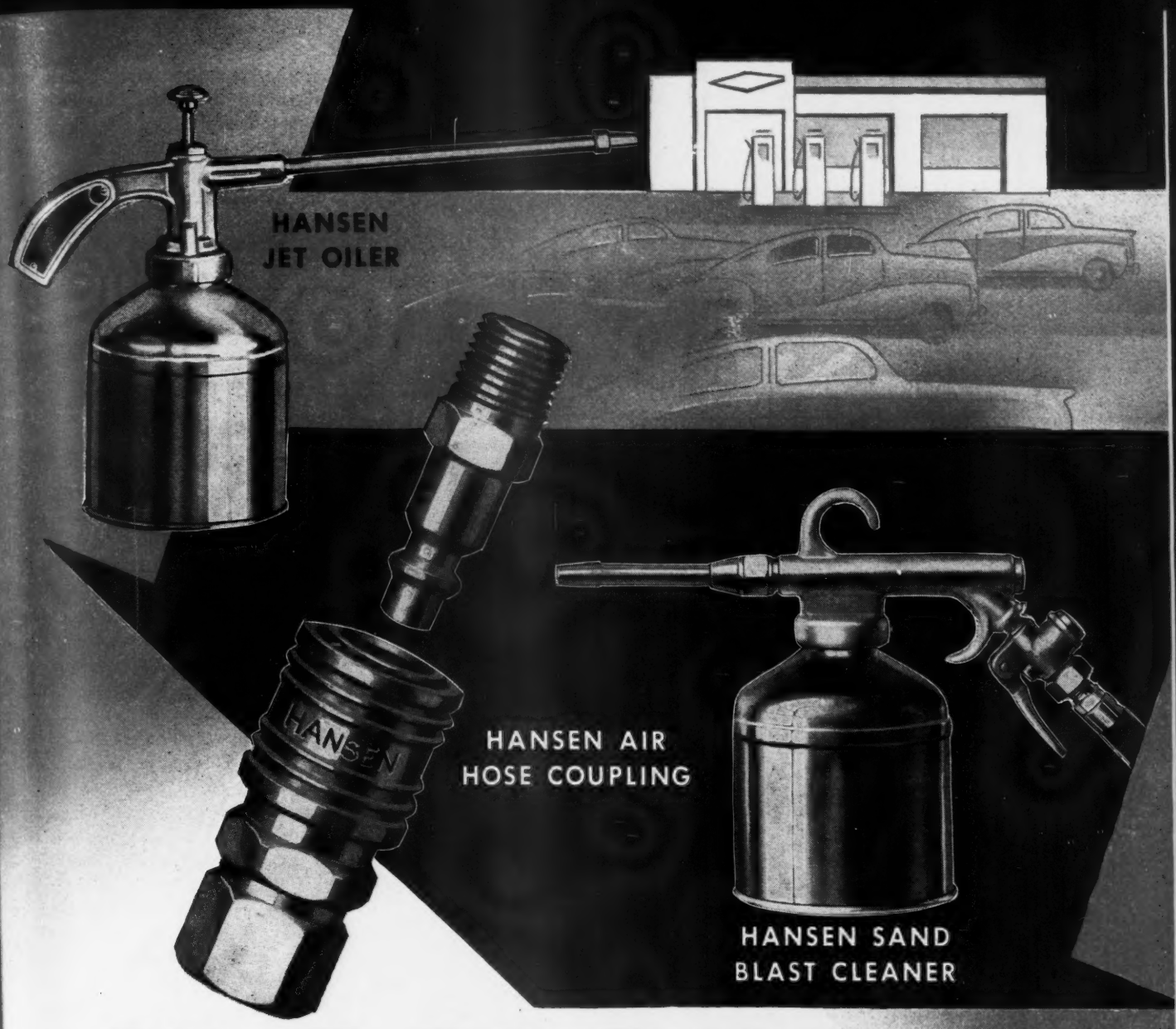
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"TRUCK BODIES THAT PAY—*ALL THE WAY*"



"Hey, Jerry, this guy says he turned turtle. Can we do anything for him or should I tell him to phone the zoo?"



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inch clearance and uses no oil. This motor runs a short distance and gets too much condensation. What can be done about it?—Hills Garage, Tarkio, Missouri.

In regard to the trouble you are experiencing with the push rods on fuel pumps this is probably caused by extreme condensation within the cylinder block or more likely a defective head gasket or a cracked block which permits water seepage into the oil pan. Drain the oil in the oil pan and examine it carefully for any signs of water. Such leaks can often be detected by gunning the engine and watching the water in the top of the radiator, gas bubbles will rise to the surface in case of a leaky head gasket. Also after the engine is thoroughly warm no moisture should be evident in the exhaust. The rusting of this linkage on some cars, such as Ford where the fuel pump housing is not open to the crancase can usually be overcome by drilling a hole in the casing of the fuel pump so as to provide some ventilation. In general, a hole ⅛ inch in diameter is satisfactory.

Chevrolet Burns Oil

I have a problem which I am hoping you can clear up for me. It concerns a 1942 Chevrolet.

This car was well taken care of and runs well. Oil consumption is the problem. I can run the car on short trips and not use any oil at all. But on a 50 to 100 mile trip I can notice the oil level has fallen. This has been going on for the last 3000 to 4000 miles of driving. I use 1 quart to 250-300 miles. I have checked the oil seal on the rear main and installed new gaskets wherever possible and adjusted the valves. When adjusting the valves I found that one exhaust could not be quieted. The plugs are O.K. and not fouled. This car does not smoke and has plenty of power. The only time I notice any smoke is when I let up on the gas and let it roll down a hill, but I took this cause to be from "loading up."

The mileage of this car is about 39,000 miles and I use No. 10 and No. 20 oil of a good grade. Could it be possible that the head is a little bit warped? Or that valve guides are worn?

Any suggestions or any other cause other than probable worn rings would be appreciated. The reason I have eliminated worn rings is because of the great power this engine has. Breather pipe has also been cleaned.—Frank D. Coriello, 45 Garden St., Poughkeepsie, N. Y.

From the description you have given of the performance of your 1942 Chevrolet there is no doubt in my mind that the trouble is caused by worn piston rings. The fact that the car smokes when rolling down hill is almost conclusive. This, coupled with the fact that the mileage is 39,000, clearly indicates that new rings will overcome your trouble.



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CAMEL Patches

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Other CAMEL Products available in the complete line are: Quick Cure Gum, Tube Repair Kits, Garage-size Kits, Vulcanizing Cement, Rubber Cement, Tire Patch Cement, Vulcanizing Kits, and Valve Stem Heat Units.

How to change a "crank case" into a contented customer



You know the type—the customer who always complains no matter how hard you try to please him. Well, there's an easy way to keep even a "crank" contented when it comes to bearing replacements. Just show him the "Timken" trademark on the bearings you install—and he won't be able to find a single fault!

That's because "Timken" means *the best in bearings* to everybody. Consistent advertising has pre-sold Timken bearings. And the fact that you use Timken bearings points up your high quality service.

So to keep contented customers coming to you . . .

. . . Just tell 'em it's "TIMKEN"*



Timken tapered roller bearings usually outlast the automobiles in which they're installed! They take radial and thrust loads, eliminate friction, hold wear to a minimum and keep parts in positive alignment. That's why you'll find them in most leading makes of automobiles, trucks, tractors and busses.

Originator of the tapered roller bearing design, The Timken Roller Bearing Company sets the standards for the industry. Timken bearings are made of fine alloy steel produced in the Timken Company steel mills and manufactured to incredibly accurate limits.

Why take chances with your reputation for topnotch service? Use only *genuine* Timken bearings for replacements. Be sure the trademark "Timken" is on every tapered roller bearing you buy. The Timken Roller Bearing Company, Canton 6, Ohio.

TIMKEN

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TAPERED ROLLER BEARINGS

NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▭ BEARING TAKES RADIAL ◫ AND THRUST →◫← LOADS OR ANY COMBINATION ✳

Tom O. Duggan

(*Continued from page* 55)

the country. He was particularly successful as a speaker before audiences of repair men, and probably has addressed as many trade meetings as any individual in the industry.

He left NSPA in 1931 to become merchandising director of Thompson Products Inc., Cleveland. In 1936 he was promoted to general manager of the service division and eventually to a vice-presidency. He remained with Thompson Products until 1946.

New Gismo Starter Repair Terminal

A fitting to replace stripped or battered starter terminals is being produced by the Gismo Manufacturing Company, Box 186, Tuckerman, Arkansas. Known as the Gismo Starter Repair Terminal, it is a non-corrosive brass cap, fitted with a set screw, that fits down over the damaged terminal and is tightened in place. The cable can then be attached to the unit by means of the attaching nut on top. It is made to fit Ford, Dodge, Jeep, Plymouth, Studebaker and many other makes. It sells for sixty cents.

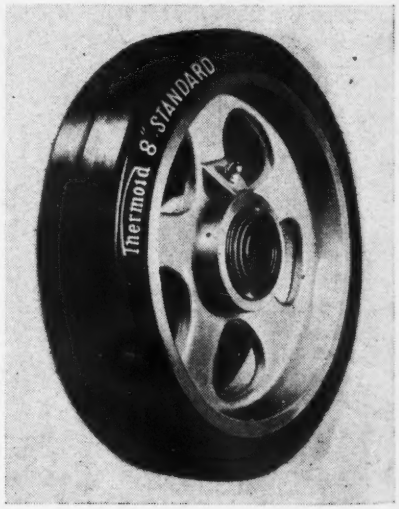
Imco Electric Tube Vulcanizer

The Imco Products Company, of 117 Bruce Ave., Stratford, Conn., is producing a new "all-purpose" electric tube vulcanizer designed to enable the service station, garage or dealer to do all tube repair jobs from a 5 in. patch to a 7 in. truck stem. It permits use of any brand low cost patch or roll gum stock in place of match or fuse plate type hot patches. It is thermostatically controlled to prevent over-heating, and is made of a cast aluminum frame and plates, with steel clad embedded heat unit

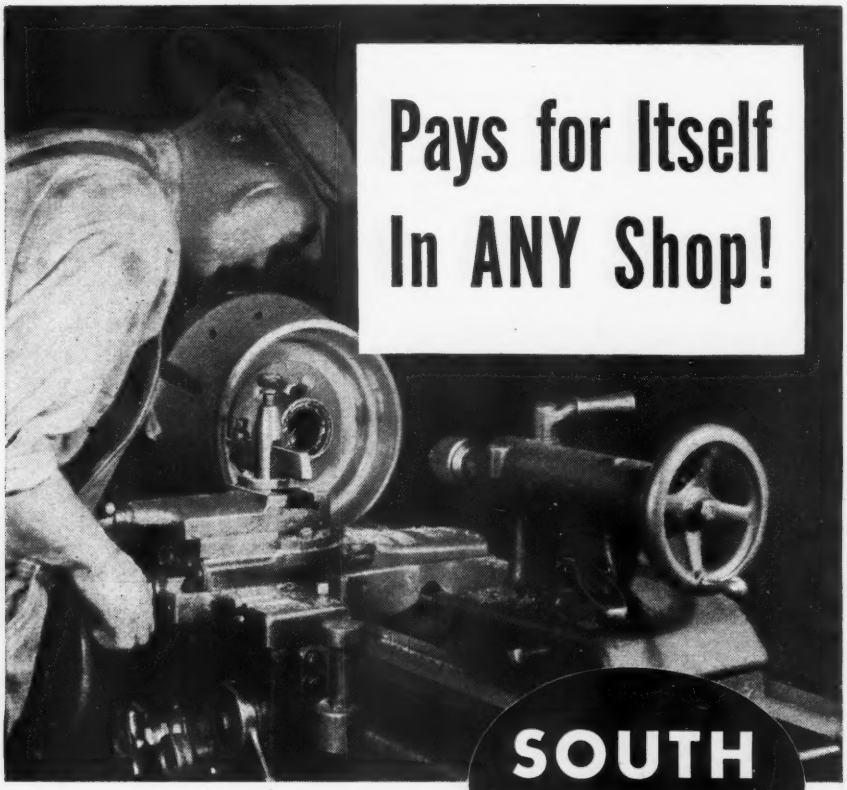
Thermoid Light Weight Industrial Wheels

The Thermoid Company, of Trenton 6, New Jersey, is offering a line of light weight industrial wheels, ranging in size from 6 in. to 12 in., and in load rating from 480 to 1200 lbs.

The wheels are made of light aluminum alloy castings with over-



sized ball bearings and built-in grease seals. There is a large grease reservoir, equipped with a standard grease gun fitting. Full range of hub length, axle sizes and the prices can be obtained from the Thermoid Company.



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So save time for your customers and save time for yourself. See your jobber's sample and place your order right away.



Compact for easy-handling — built for hard usage — Attractive two-tone finish with chrome metal parts and plastic instrument panel retains beauty in constant use.

ONLY **$197.50**

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ALLEN EQUIPMENT

ALLEN ELECTRIC and EQUIPMENT CO. • KALAMAZOO, MICHIGAN

GUARANTEED FOR TWO YEARS

YOUR JOBBER HAS A FLOOR SAMPLE • ASK TO SEE IT TODAY

Another Ford Cut

(*Continued from page* 55)

heavier bumper guards. Fender mouldings have been lowered and the rub moulding strips extended full length along the bottom of the front fenders. The stainless steel belt trim is wider and door handles heavier. A chrome-plated deck lid ornament replaces the two deck lid mouldings formerly used.

Interior designs on both the super-deluxe and deluxe models have been restyled. Two new custom upholstery combinations are available in the super-deluxe line. Door panels have been completely restyled in heavier, more attractive reddish brown artificial leather with taupe boucle fabric center panels. Instruments have gold and gray screen textured dials.

New Moog Piston Expanding Method

The Moog Piston Ring Company, of 6650 Easton Ave., St. Louis 14, manufacturers of Moog X-Plus Power Piston Rings, announce the Moog Piston Expanding Method, a new system for restoring collapsed pistons for motor reconditioning.

The new system is based on the use of a piston expanding machine that utilizes heat treatment to expand pistons of all types, aluminum, cast iron, and alloys, in 40 to 60 seconds. These machines are being placed with jobbers handling Moog Piston Rings as a special service to be offered their customers.

TWO TOUGH JOBS MADE EASIER

FOR WASHING

FOR POLISHING



Here's a MOBO combination that cuts down washing and polishing time to a new minimum . . . brings back life and sparkle to dull finishes.

MOBO CAR WASH POWDERED is a new-formula wash for cars, trucks and busses. It removes caked dirt, oil, grease and dried bugs easily and safely. Just apply solution (half an ounce in 3 or 4 gallons of water) and hose off—no wiping dry necessary.

MOBO STREAMLINE AUTO POLISH replaces old-fashioned patch-by-patch polishing . . . is a time-saving, one-operation polish.

These MOBO products are built for speed—they do the jobs and make the profits—quickly. Order today.

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Webster Wet Honer

A larger, improved version of their bench model wet honing machine is offered by Webster Products Co., 1100 W. 9th St., Cleveland, for the wet honing of interior cylindrical surfaces. Among the improvements incorporated in this model are, according to the manufacturer:

Faster release arm; Micro adjustment dial; three position work arm; Timken main spindle bearings; two speed drive; a larger pan. With accuracy guaranteed by the manufacturer to .0002 in., this honer permits honing of diameter from .670 in. to 3.00 in. Deliveries within 30 days of date of order are promised.

Direct-from-Container Spray by DeVilbiss

A new pump-type underbody coating system, that permits direct-from-shipping container spray application of high viscosity materials has just been announced by the DeVilbiss Company, 300 Phillips Avenue, Toledo, Ohio.

The new system (DeVilbiss Type QBD) permits spraying of materials without the added bother and time consumption of removing the material from its shipping container and putting it into special containers. It comes equipped with two independent regulators to meet varying conditions of temperature, consistency, air supply and hose resistance. The pump itself features a nitralloy air valve and wear-resistant materials.



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on Wheel Balance Weights and Equipment

The Harley C. Loney Company's particularly close relationship with the automotive industry tire, wheel, rim and balancing equipment manufacturers—and its own years of experience—have made this complete catalog on wheel balance weights and equipment possible. At your fingertips are truck-bus rim types produced in United States and Canada, as well as universal balance weights for passenger cars and all truck or bus requirements.

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HARLEY C. LONEY CO.

BALANCE L&H WEIGHTS

DETROIT 21, MICHIGAN

Indianapolis 500 . . . (*Continued from page* 42)

gine speed is 8000 rpm. Transmission is by a three-speed front-wheel-drive unit of highly compact design, featuring integral shock absorbers.

The front end of the Novi has been lightened and refined over the 1946 car. Forward suspension is by torsion bars, mounted longitudinally and extending outside the body work toward the rear. Steering is by means of a separate drag link to each front wheel, a system in use on the Maserati cars for some years. This type of construction eliminates any type of track rod or short link between the wheels. Rear suspension is by conventional semi-elliptics. 18x750 tires are mounted on wire dural wheels on a 106 in. wheelbase. The ground clearance is 5 in.

The body and frame, built by Kurtis Kraft, Inc., of Los Angeles, combine a low profile (36 in. overall) body and an underslung frame made of chrome molybdenum channels.

It will be interesting to watch this latest version of a car which, but for a broken valve in the 120th lap of last year's Indianapolis classic might have occupied the winning spot held by Robson's Thorne Special.

Ford Changes Method Of Making Crankshafts

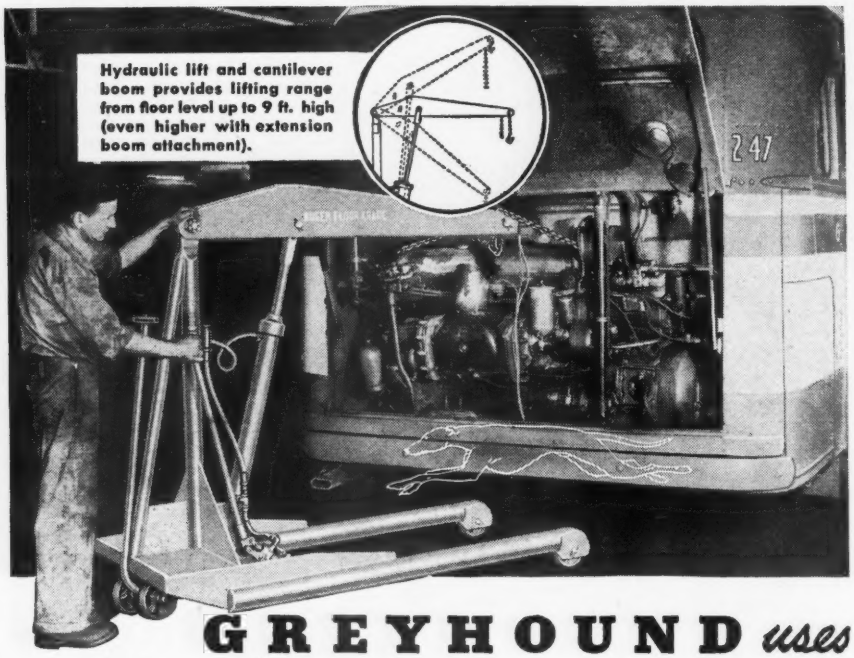
Stronger crankshafts for Ford products, a corresponding reduction in service problems and a considerable saving in manufacturing costs have been achieved by a novel revision of crankshaft molding technique.

The new technique utilizes the cooling capacity of the continuous conveyor hangers on which Ford crankshafts are poured in groups of four. Since metal dissipates heat 30 times faster than the surrounding sand core, the hangers, serving as a base for the vertical molds, promote the progressive cooling af the metal from the bottom up. This is necessary so that molten metal continually can fill in the space normally resulting from shrinking.

The new technique eliminates the costly practice of employing small, cylindrical inserts or "chills" in each crankshaft mold. Formerly these small, oblong inserts were suspended near the bottom of the vertical molds, their specific purpose being to accelerate heat dissipation and to promote progressive solidification from the bottom.

Unlike the new technique of utilizing the hanger as a coolant or "chill," the inserts became an integral part of the crankshaft. Since fusing was not always complete, gas pockets, porosity and structural weakness resulted.

In addition to its other benefits the new technique has reduced drill breakage by approximately 75 per cent. The high breakage formerly encountered was due to the necessity for penetrating the softer "chill" insert when drilling oil holes through the number one crankshaft and crank-pin bearings.



GREYHOUND *uses*
RUGER *Hydraulic* **Floor Cranes!**

Keeping up-to-the-minute with modern time-saving shop equipment is one key to the efficiency of Greyhound's maintenance program. Typical is the purchase and use of Ruger Hydraulic Floor Cranes for removing and installing motors, motor heads, generators and other heavy parts and assemblies.

On jobs like these the Ruger does work no other equipment can do . . . reaches over, under and into tight places to lift, lower and move heavy loads in and out . . . makes it easy to spot and hold heavy parts accurately for installation. Frequently use of the Ruger saves a complete tear-down to remove and install parts and assemblies in inaccessible locations.

Every garage and maintenance shop needs the Ruger, for the Ruger quickly pays for itself by the time and money it saves... sometimes in the first thirty days. Built in 1-ton, 2-ton and 3-ton sizes, also a stubby model for bus motor work.

Mail coupon *today* for your free copy of the new Ruger Bulletin. Address nearest office listed below.

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WILL I GET ALL THE "ZERONE" AND "ZEREX" I WANT NEXT WINTER?

A fair question—and here's our answer:

We are facing the greatest demand for "Zerone" and "Zerex" that we have ever encountered, but the supply is still limited. Therefore, the system of allocation to our wholesalers, from whom you get your anti-freeze supplies, will still have to be followed.

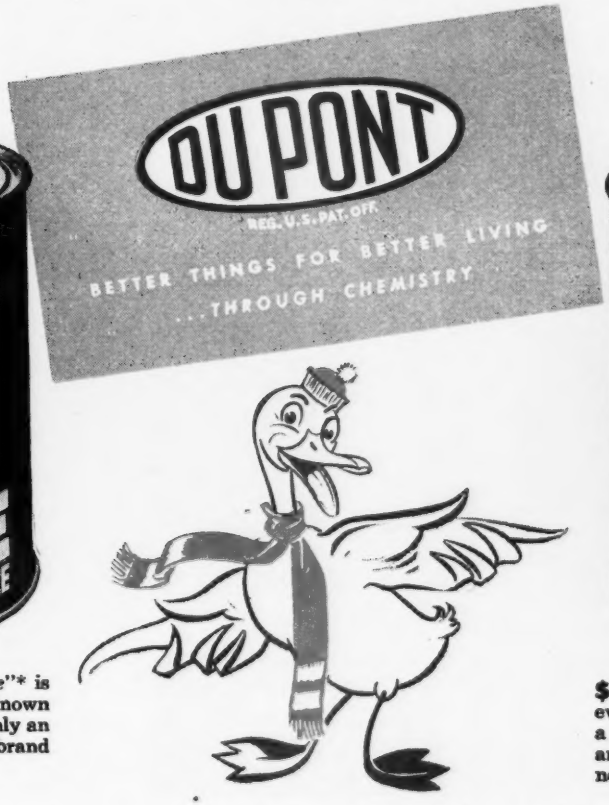
You will probably say, "What, again? The war has been over two years—why isn't there *lots* of 'Zerone' and 'Zerex'?" The facts are that new plant construction, started as soon as government regulations would permit, has been so delayed by inability to get essential parts that we are now several months behind schedule. Everything humanly possible is being done to complete construction by the latter part of this year.

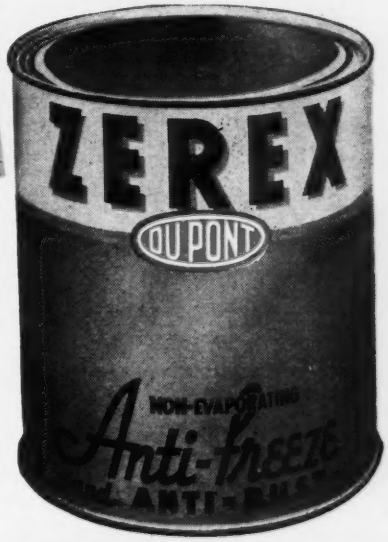
Your jobber, we are sure, will continue to distribute his allotment of "Zerone" and "Zerex" fairly and squarely—taking care of his regular customers first—a plan we commend to you, too.

Better see your jobber early about your supply. The best way not to be too late is to put your order in now.



$1.00 A GALLON. *"Zerone"** is made from the most efficient of all known safe anti-freeze materials. Needs only an occasional check-up. It's the dollar brand in most demand.





$2.65 A GALLON. *"Zerex"** is non-evaporating. Like "Zerone," it contains a special chemical inhibitor with unique anti-acid and anti-rust properties. There's no better anti-freeze. *REG. U. S. PAT. OFF.

Goodyear's Method of Repairing Cuts

New and improved method of repairing tread cuts—one of the most common types of injury encountered in the operation of truck and off-the-road tires—is announced by The Goodyear Tire & Rubber Company.

According to B. C. Eberhard, manager of tube and accessory development for the company, shallow tread cuts which do not penetrate into the fabric plies are not particularly detrimental to the life of a tire. The real danger, however, results from stones, gravel, and other foreign objects that become wedged in the cut and continue to work into or through the tire by forces of tread flexing and road impact.

The new method, said Mr. Eberhard, simply involves probing the cut to remove all foreign material, then by use of a sharp pointed knife or rasp, trimming out or grinding around the cut to form a cone-shaped cavity to extend to the bottom of the cut. After the cuts have been trimmed out, the tires can be continued in service without danger of impairment of service life or extension of the cut. Full advantage of this method of treating shallow cuts can be realized through frequent inspection of tires to remove stones, glass, and other foreign substances, and detection of the deeper, more serious cuts which require early vulcanized repairs to insure the operator obtaining maximum service life from tires.

Mr. Eberhard emphasized that, in probing the tire, the angle of the skive or bevel should be no more than required (30 to 45 degrees), to prevent future wedging of foreign material in the cavity, and must not extend in depth beyond the breaker. Heretofore, said Mr. Eberhard, it was recommended that all shallow tread cuts be vulcanized.

THEY'LL STOP FOR THIS

...AND THEY'LL STOP FOR THESE, TOO!

When warm weather and the call of the open road send customers in for spring service, here's a tip:

After Draining Anti-Freeze from Cooling Systems...



CLEAN 'EM with KI-MO

...a fast, safe cooling system cleaner. Needs no neutralizer!

Keep 'Em QUIET with LUBRO

...water pump lubricant and rust preventive. Stops squeaks and squeals!





Pin-up of SERCO GIRL No. 10 Mailed Free on Request. Order by Number.

SERCO PRODUCTS

Manufactured and Guaranteed by

Service Supply Co.

1115 SEVENTH ST. • DENVER 4, COLO.

Burd Piston Ring Makes Three Changes

Three changes in the sales organization of the Burd Piston Ring Company were announced recently by E. F. Eiseman, Manager of Replacement Division sales for the company.

J. W. Savage, formerly in charge of the Ohio-Indiana-Michigan territory, has been transferred to Wisconsin and Illinois. Savage makes his home at Peoria, Illinois. Prior to his becoming associated with Burd, he was a salesman for an automotive parts jobber, and before that operated a chain of service stations.

A. W. Boehm will succeed Savage in Ohio, Indiana and Michigan.

G. R. Matheson of Kirkland, Washington, is now sales representative for the Burd Company in Oregon, Washington and part of Idaho. Matheson was previously associated with the Thermoid Company. Prior to that he was employed at the Burd Seattle warehouse.



A SOCKET MUST HAVE PULL

TO BEAR THE NAME *New Britain*



The complete New Britain Line for Automotive, Aircraft, General Maintenance & Production Needs is sold by leading Jobbers.

Greater Strength and Better Fit... that's what New Britain guarantees in every Socket that bears this famous signature.

Only the finest alloy steel can meet the rigid requirements of New Britain... to give you amazing pulling power for least bulk. Only precision machining and broaching can hold tolerances so close as in these Sockets... to give you unequalled "sweet fit on the nut". And, heat-treatment must be expert to boost strength to such high, super-safe limits... to give you that extra toughness that stands up under hard use.

No slips or sudden breaks here... just downright knuckle and job insurance. That's why New Britain Sockets and Drive Parts have so much *PULL* with mechanics. Ask your NAPA Jobber to show you this Line of *guaranteed* Hand Tools. The New Britain Machine Co., New Britain, Conn.

New Britain

GREATER STRENGTH · BETTER FIT HAND TOOLS

Ford's New Method Of Producing Blocks

Improved castings on V-8 cylinder blocks have been achieved by Ford Motor Company mechanical design engineers by means of a new production device for coating the sand cores with a protective material.

Core dipping is an old practice in foundry operations but the new automatic dipping and spinning unit at Ford adds several important features to the old method and deals a heavy blow to one of the toughest problems of block castings.

Until recently each section of the core was dipped separately and dried in the core ovens separately and then assembled into a complete unit. Although a paste was used in assembling the various sections of the core there was always the hazard that the joints might not be a perfect fit, allowing the molten metal to flow into the crevices and form a thin metal "fin" in the interior of the block resulting in a restricted water passage.

With the new equipment, the assembled core is handled as a complete unit, eliminating the possibility of open spaces between the joined sections and also reducing considerably the likelihood of sand from the cores getting into the molten metal.

This process makes use of a conveyor with a spinning fixture for the core which passes through a dipping tank located in a pit below the core handling section. As the core emerges from the tank a gear engages with a worm screw and spins the core, removing excess coating compound.

Export Controls Removed

Export controls on new and used passenger car tires will be removed effective April 1, 1947, the Office of International Trade, Department of Commerce, announced today.

The decision to decontrol tires is based on the great improvement in domestic production, OIT said. Production of passenger tires was 28,392,000 in 1945, and increased to 66,508,000 in 1946, it was pointed out. Output in 1939 was 49,933,000.

During 1945, OIT said, approximately one tire was available for domestic replacement for each car in service, while 1946 production provided two replacement tires for each car.

New Schrader Tire Valve Converting Manual

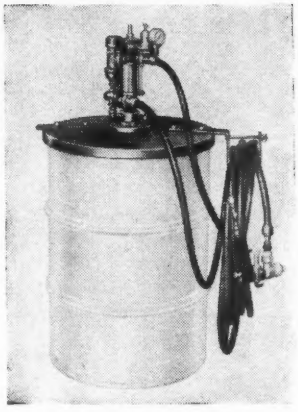
Because, with the development of the new wide base rim and "W" tube for trucks and buses, tire valve converting and replacement practice has materially changed, Schrader has brought out a tire valve converting manual.

This manual indicates which valve to use for a specific rim and tube combination and how to make the correct first and second bends in the valve to meet the old and new rim designs. Writing to A. Schrader's Son, P. O. Box 240, Brooklyn 1, N. Y., mentioning MOTOR AGE, will obtain a free copy of this manual.

NOW-Get EXTRA Profits with R. M. S. Underbody Coating Equipment!

★ **It's Easy** to start a profitable Underbody Coating Service with "packaged" R.M.S. Equipment. If you have the usual shop air compressor, all you need is either one of the R.M.S outfits described here, plus a supply of underbody coating material, and you're ready to start this profitable service.

★ **Cash-In** on the tremendous demand for underbody coating... new car owners want its lifetime protection; drivers of old cars want the "rattle-proofing" sound-deadening results that a good coating job provides.



R. M. S. DRUM-MOUNTED SPRAY COATING OUTFIT
Includes R. M. S. pump with gauge, regulator, valves and fittings, mounted on drum top to pump from original containers; underbody coating spray gun, 25 ft. air hose, 25 ft. material hose, connections.

★ **No need to wait!** *R. M. S. equipment is available Now!*

R. M. S. PORTABLE UNDERBODY SPRAY COATING OUTFIT
Includes R. M. S. pump with gauge, regulator, valves and fittings, and 10-gal. container on wheels (can also be used to pump from original containers); underbody coating spray gun, 25 ft. air hose, 25 ft. material hose, connections.

Price (either outfit) complete, f. o. b. Oakland **$235**

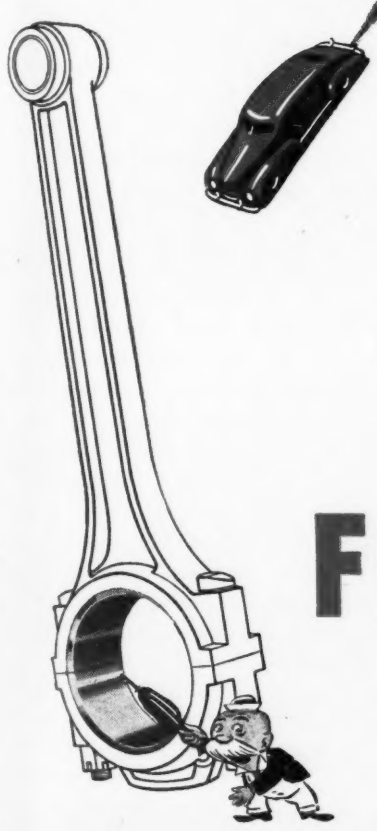
SEE YOUR EQUIPMENT JOBBER OR WRITE TO:

STEPHENSON AIR BRUSH PAINT CO.

1630-A WEBSTER STREET · OAKLAND 12, CALIFORNIA

Performance goes up in smoke...

when worn connecting rod bearings cause oil pumping



Heavy exhaust smoke behind means engine trouble ahead! It's a sign that worn engine bearings are letting excess oil carbon-foul pistons, rings, valves and spark plugs, causing sluggish operation, stealing pep and pick-up. Badly worn bearings can cause costly crankshaft damage, too! Restore power, pep, economy—replace with Federal-Mogul Oil-Control Bearings. They are engineered for the job!

FEDERAL-MOGUL SERVICE
DIVISION OF FEDERAL-MOGUL CORPORATION
COLDWATER, MICHIGAN

Replace in Sets with Genuine

FEDERAL-MOGUL

Oil-Control Bearings



The Frazer Manhattan

Kaiser-Frazer Corp. today introduced a new 1947 model four-door sedan, the Frazer Manhattan, which in an advanced showing received the New York Fashion Academy award as "The Best Dressed Automobile of 1947."

Prior to Kaiser-Frazer's announcement of the new model, the Fashion Academy gave it a special gold medal award at a luncheon in New York last Friday honoring the 1947 winners of the academy's 19th annual "Best Dressed Women" competition.

This is the first year any automobile has been honored by the Fashion Academy. After months of consultations with leading designers, artists and stylists, Kaiser-Frazer's styling department selected six interior and exterior color combinations for the luxury Manhattans.

Pilot models have been viewed at the Willow Run plant by a majority of the K-F distributors. The model was named by Joseph W. Frazer, president of Kaiser-Frazer. Distributors have placed orders for 12,000 units with the first 3000 scheduled for delivery in April.

Factory list price is $2,550.



Buick's New Warehouse At Hillside, N. J.

Buick soon will establish a large parts warehouse at Hillside, N. J., to expedite flow of service parts to Buick dealers and owners in five eastern states, including the New York metropolitan area, Harlow H. Curtice announced today.

The Hillside warehouse, one of the largest in Buick's nationwide network of parts depots, will have 58,000 square feet of floor space for storage of parts. Curtice said Ivan H. Smith will be in charge of the Hillside operation, serving New York, Pennsylvania, Delaware, Maryland, the District of Columbia and part of Virginia.

Curtice announced that Buick shipped more than 40,000,000 pounds of service parts during 1946 and hoped to exceed that quantity this year. Buick already has shipped more than 15,000,000 pounds of parts this year, he said.

PLASK Masking Material Is Applied Like Paint

Claimed by the manufacturer to reduce masking time in car paint preparation by 50 per cent, a new plastic paint spray protector called PLASK has been introduced by the Shervwell Products Co., 6523 Euclid Ave., Cleveland.

PLASK is applied with a brush, like paint, and dries immediately. It is waterproof and airproof, and peels off in large sheets. It is recommended for glass and all types of unfinished, plated, or finished non-porous metal surfaces, including baked synthetic enamel. Only one coat is required, and one gallon should cover about 200 square feet. A quart sells for $1.35, a gallon for $4.50. It is also available in special compounds to meet specific industrial requirements.



PUT THE AC OIL TEST PAD TO WORK

AC Oil Test Pads *sell* Oil Filters and Replacement Elements for AC dealers, by *showing* customers the condition of their oil.

Easy. Quick. Simple. When you wipe the dipstick use the white Pad, instead of a rag. The oil sinks in . . . the dirt stands out. Then you tell the customer how dirty oil clogs ring slots and valves, deposits grit on moving parts, wastes power and fuel. That's enough for any intelligent owner. He'll buy a Replacement Element, or an AC Oil Filter if he has none, to protect his engine and his pocketbook.

Every engine needs an oil filter. Cash in on that fact. Use the AC Oil Test Pad . . . the super-salesman . . . everytime you check oil.

AC SPARK PLUG DIVISION • GENERAL MOTORS CORPORATION

AC Oil Filters

HOW TO GET AC OIL TEST PADS—Register as an official AC Oil Filter Service Station with your AC wholesaler

Pew Urges Unity To Halt Motor Tax Increase

President J. Howard Pew urges members of Sun Oil Company's organization, as well as all motorists everywhere, to unite in an effort to prevent any increase in motor taxes. Legislatures of forty-four are meeting in regular session in 1947. Already in seventeen states bills have been introduced to increase the tax on motor fuels, and other states are expected to follow suit.

In stressing the fact that prompt action will be needed to stem this nationwide attempt to "soak the motorist," Mr. Pew said:

"A Congressional tax expert once stated 'the science of taxation is the science of getting the most feathers with the least squawking of the goose.' It is time once again for the petroleum goose to 'squawk' if it is to survive.

"In 1946, out of our total population of 140,000,000, there were 50,000,000 licensed drivers of motor cars. In that same year, 1946, $1,500,000,000 in gasoline taxes alone, and a total of more than $3,000,000,000 in special automotive taxes was paid by those 50,000,000 licensed drivers of motor cars.

"There is absolutely no justification for an increase in the gasoline tax in any State. For instance, in Pennsylvania, a careful study by experts shows that the Highway Department of our State has all the money it can possibly expend in new construction during the next two years. Before that period ends the Pennsylvania Legislature shall meet again and can take another look at the situation.

"Generally speaking, much of the demand for increased gasoline taxes grows out of theoretical plans for building super-highways that are not required by traffic needs. Then, too, the demand comes from officials who want to use gasoline taxes, directly or indirectly, to lower other forms of taxes or for purposes not at all related to highways.

"Originally imposed for the construction and maintenance of our highway system, gasoline taxes of late years have been imposed for almost any and every purpose that suited the politician's fancy. This should be stopped.

I hope to see the time when every state in our Union will adopt such legislation and forever put an end to the raiding of the highway treasury.

"What can you do to help prevent any increase in gasoline taxes in your state? You can personally contact the members of the legislature from your home district and demand that no further increase in motor taxes be sanctioned.

"You can give your personal assistance to those who are carrying on the work of the various oil industry tax committees, automobile associations, highway user organizations, and others, in an effort to prevent such tax increases. You can urge your family and your friends to join you in this endeavor, for it is only by intensive personal effort that the great motor tax evil can be remedied."

Warner packs a wallop for your Spring drive

The Warner 1-2 Treatment

—PLUS—

Powerful National Advertising!



Here's the "one-two punch" that means extra profits for you from Spring cooling system service: It's the Warner 1-2 Treatment—Warner Radiator Cleaner *and* Warner Cooling System Protector in a *single-unit sale* plus a terrific advertising campaign in big, two-color advertisements every second week in *Saturday Evening Post* and *Collier's!* It's the biggest job ever done to help you make more money from cooling system service.

Millions of motorists will see nearly 20 million Warner ads in *Post* and *Collier's*. And they'll be getting ready for *complete* cooling system service with the Warner 1-2 Treatment. Just think of it— *two* sales instead of one—you'll practically double cooling system service profits! It's simple and sure-fire—the Warner 1-2 Treatment for *complete* cooling system care.

Standard of Protection
For More Than 25 Years



Every "drive-in" is a prospect for Warner Products. Sell 'em all!

Warner

A FAMOUS NAME IN AUTOMOBILE HISTORY

Warner Cooling System Compounds

WARNER-PATTERSON COMPANY
920 S. MICHIGAN AVE., CHICAGO 5, ILL.



Sell the Slow-Down

★ At least 6 out of 7 brake applications are *slow-downs* —only one is a stop.

So, sell the *constant* need for good brakes, not just the occasional stop. Use the *positive* approach and sell a reline on 1 in every 4 cars.

Raybestos builds full-range control in every set of linings . . . manufactures brake materials to cover every situation . . . engineers them for the exact combination to give smooth slow-downs; safe stops.

Cash in on this selling "plus." Sell the slow-down, not just the stop.

THE RAYBESTOS DIVISION of Raybestos-Manhattan, Inc.
Bridgeport, Connecticut

NEW! **Raybestos Ray-BOND Sets Available Now**

Raybestos is ready with new undrilled sets in correct combination for bonding brake lining to brake shoes—for use with bonding equipment.

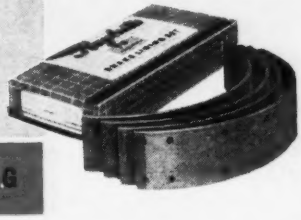
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Raybestos

AMERICA'S BIGGEST SELLING BRAKE LINING



PG PROVING GROUND TESTED BRAKE LINING, BRAKE BLOCKS, CLUTCH FACINGS, FAN BELTS, HOSE for Cars, Trucks, Buses and Tractors



Her Swim Suit

—by Claire McCardell

The Motor Oil

for her car

—by VALVOLINE

AS ADVERTISED IN Current Issues of LIFE and TIME

This traditionally fine motor oil is Premium Quality—made in limited quantity. But there is always enough for the select group who demand better than usual protection for their cars. You'll find Premium Quality Valvoline Motor Oil at one or more better dealers in your community.



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MOTOR OIL

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New York, Toronto, Pittsburgh, Detroit, Atlanta, Cincinnati, Chicago, St. Louis, Los Angeles, San Francisco, Portland, Seattle, Vancouver, B. C.—Refineries at Butler; Freedom, Pennsylvania

Chevrolet Training for Dealers Uses Film

Chevrolet dealers throughout the nation are currently training personnel in modern merchandising and sales and service management, through a new program of visual educational aids and slidefilms, T.H. Keating, general sales manager of the Chevrolet Motor Division, announced recently.

"During the past few weeks Chevrolet has introduced a new program to assist dealers to prepare for competitive markets," said Keating, "and to serve as a medium for active discussion of dealer problems and customer relations."

Keating said the films—discussional and sound, in both black and white and color—incorporate Chevrolet's pioneer experience in the field, and also utilize the dramatic techniques employed by the army and navy in the wartime training program. Chevrolet began using visual education aids to assist dealers in 1925, but shelved the program during the war years.

Films will be released covering such subjects as selling accessories in today's markets, modern wholesaling methods, truck sales, customer relations, special equipment information and other subjects recommended by Dealer Planning Committees and Sales Managers Forums.

New Book on Tuning Up Automobiles

"How to Tune Up Your Automobile," by Jack Steele explains and suggests repairs for many of the troubles that bother the average car-owner or mechanic. It tells how to check bad coils, breaker points, weak fuel pumps, poor compression and defective carburetion, and goes into some detail on distributors, automatic chokes, starting motors and generators, automatic voltage regulators and third brush regulation. Information on disassembly and repair of carburetors is also included. Twenty-five specific case histories are a feature of the book. It can be obtained from the Norman W. Henley Publishing Company, 17-19 West 45th Street, New York 19, N. Y. $2.50.



From 'way Back.....

Exceptionally good workability and simplicity of application have made Ditzler DQE the long-time favorite of repaint men. DQE is famous for its fast setting qualities—brilliant lustre—firm adhesion—outstanding durability.

Ditzler Color Division, Pittsburgh Plate Glass Company, 8000 W. Chicago Ave., Detroit 4, Mich.

DITZLER

Aluminum Timing Gears For Automotive Use

Successful development of aluminum timing gears with bonded-in steel hubs for automotive use was announced recently by Al-Fin Corporation, subsidiary of Fairchild Engine and Airplane Corporation.

Perfected after two years of research and testing, the new gears are reported to be much stronger than the molded resin-in-fiber gears commonly used in automobile engines. They have much longer life than molded resin gears because of the better wearing qualities of aluminum, and they stand up better under heavy loads, the announcement said. The company claims the gears are as quiet in operation as molded resin types.

Aluminum gears with steel hubs are expected to be especially suitable for heavy-duty use, as in engines of trucks and buses. The gears are composed of aluminum alloys chemically bonded to steel hubs by the Al-Fin process, which gives the bond a tensile strength of 6,000 pounds per square inch. The steel hubs are bonded-in to prevent the gear from "taking a set and walking off the camshaft."

Individual camshaft timing gears made by the Al-Fin process already have been operated over 100,000 miles under severe load conditions without failure, the company said. M. V. Little of the Al-Fin Corporation described one of the tests:

"One gear with a two-inch plain round steel hub, with nothing but the Al-Fin bond holding the aluminum to the steel, was given a 'shear test,'" he said. "Automotive engineers attempted to press the hub through the gear in an effort to rupture the chemical bond between the two metals, but they were unable to budge it even at 98,000 pounds pressure.

"This same gear was then run 123 hours at 4,000 rpm on a breakdown test. Still standing the gaff, it was then installed in the engine of an inter-city truck operating between Chicago and Pontiac, Mich. After 86,340 miles of operation in the truck, the gear was remover for inspection and no wear was discernible.

"Millions of miles of operation with similar gears has shown that this performance is typical of the load-carrying ability and life expectancy of Al-Fin aluminum gears."

Christopher Says Packard Can Double Production

George T. Christopher, president and general manager of the Packard Motor Car Company, predicted in the company's 1946 Annual Report that "the first half of 1947 will *not* greatly improve in volume over the last half of 1946," but that "the last half of 1947 has possibilities of doubling the first half of the year."

He pointed out that to forecast results of operations for 1947, "we must assume national and international events will not alter our national economy materially from the 1946 level."



I LIKE the Hygrade Line because they have tools and testers that make my work easier—and more profitable. Take Jiffy Jig, for instance. You lock it in a vise and clamp any small unit to it—fuel pump, carburetor, distributor, etc.

No chewed up castings from jaws of vise; no breakage from falls. Turns in any position at most convenient working angle. Leaves both hands free. A great tool—my best helper. Inexpensive. Get one, you'll like it.

From your jobber

HYGRADE PRODUCTS CO., INC.
35-35 Thirty-fifth Street, Long Island City 1, N. Y.

HYGRADE
REPLACEMENT PARTS

Hygrade Line AUTOMOTIVE PRODUCTS

• • ENGINEERED FOR OLD UNITS • •





YES, AND IT SELLS MUFFLERS TOO!

Here is the perfect solution to your muffler stocking problems. It's the new space-saving Maremont Muffler Stocking and Display Rack. Designed to hold 16 to 18 of your fastest selling mufflers and with a dispenser for clamps, it occupies only 30 x 30 inches of floor space and can be placed in any convenient location in grease bay or waiting room. Colorful, attention-commanding sign on top serves as constant reminder to your customers that mufflers need attention . . . It's the newest . . . it's the *latest* thing for the alert dealer who is interested in selling more mufflers and acquiring a compact, space-saving means of stocking mufflers.

For more information on this new compact Muffler Stocking and Display Rack see your nearest Maremont Distributor or write to the factory.



ALSO MANUFACTURERS OF ALLOY STEEL SPRINGS

SINCE 1877

MAREMONT MUFFLERS

Maremont Automotive Products, Inc.
General Offices: • South Ashland at 16th Street • Chicago 8, Illinois

General Motors Plans For Future Market

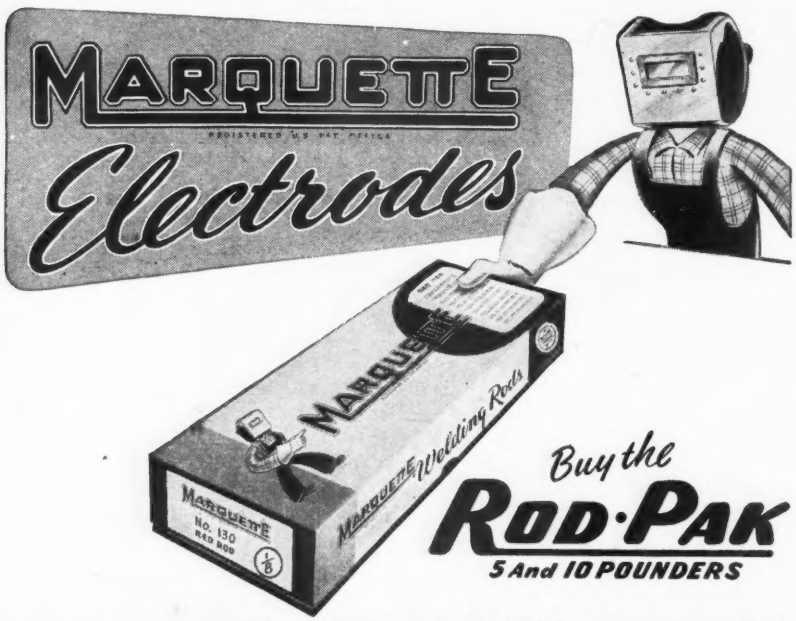
General Motors is reported considering abandoning its Torpedo style bodies at least for the present. The report states that the move possibly might reduce the amount of sheet steel required, but no official confirmation of the reported action is available.

Published report that Buick is experimenting with a V-8 engine must be considered in the light of known automotive engineering practice. All companies, of course, are continually working with various types of engine with a view to possible use at some later date. Apparently, that is the case with the Buick V-8. Buick, like all other manufacturers, recognizes that considerable advancement is being made in developing improved high octane fuels which result in increased power and consequently greater torsional strains to the crankshaft. As a result, the long crankshafts currently being used in straight 8 engines are not as suitable as a short crankshaft and ultimately some means of shortening the crankshaft assembly will have to be found. The general belief is that the V-8 engine is the answer, but some individuals still think that the in-line engine could be shortened up enough to meet the high octane requirements.

From time to time bits and pieces of information sift out of the Chevrolet light car division. There is no way, of course, of checking on the accuracy of the reports but at least they offer some interesting speculation.

The latest is that the car is pretty much a smaller version of the present Chevrolet with an overall size of about 75 per cent of the current model. The engine is said to be a small 6-cylinder unit with great operating economy. Wheels are smaller and have only four bolt holes at the hub rather than five as in the present model. Our informant guessed that the weight of the vehicle in its present state of design would be about 2200 lbs.

None of this information is based on any official data and might, of course, be entirely out of line.





Sold Exclusively thru the Nation's Leading Distributors

Marquette Leads Again! . . . to give you a choice of 17 TYPES of famous Marquette Electrodes in ALL SIZES. Each ROD-PAK contains 5 or 10 pounds of one size and type of electrode. Instantly identified, size and type are clearly printed on both ends of ROD-PAK. Handy to use, handy to stock. Makes it easy to keep a fresh supply of Marquette Electrodes in *all* types and sizes.

Buy the **WELD·ALL KIT**

12 types of rod in one handy package. Contains the right rod for every welding job . . . each rod a leader in its class. Ideal for all automotive welding jobs, the Marquette Weld-All Kit furnishes a practical supply of rods for fast, low cost repairing of anything that comes along. This generous supply of Marquette Electrodes is an actual $21.90 value.

LOW BARGAIN PRICE...$14.95

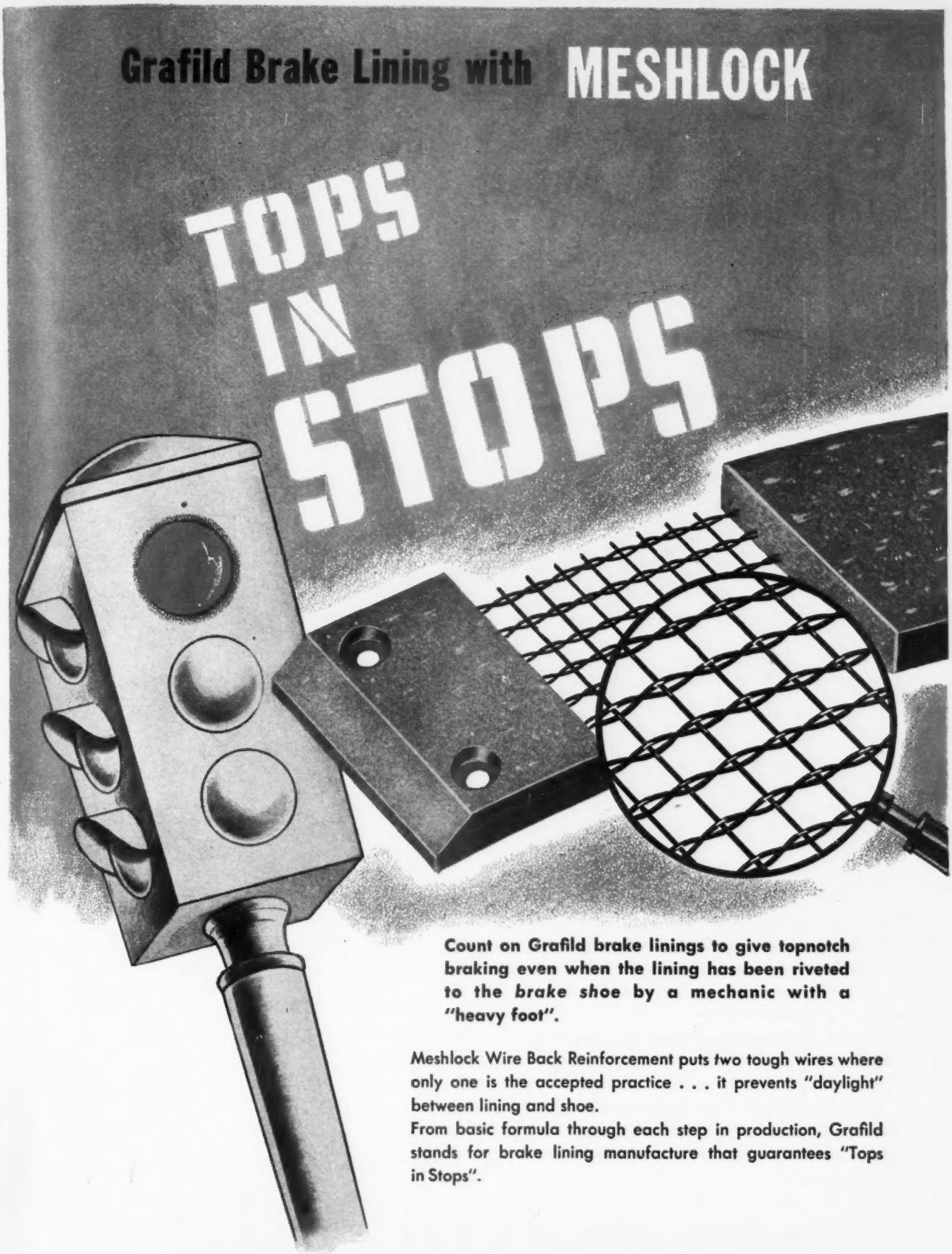
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"Now you're getting it. Try that smile and cheery greeting once more and we'll quit the courtesy lesson for today."

Grafild Brake Lining with MESHLOCK

TOPS IN STOPS



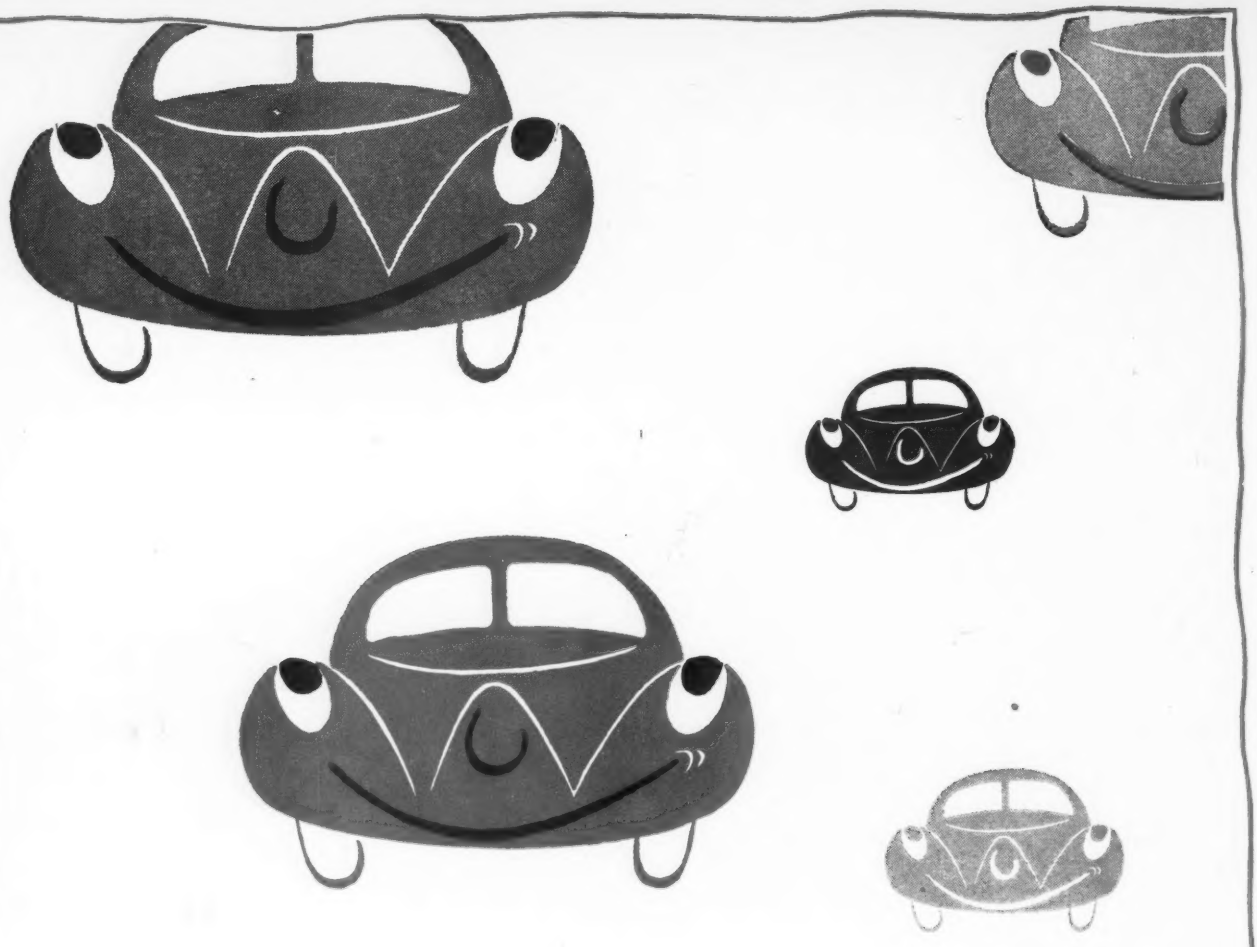
Count on Grafild brake linings to give topnotch braking even when the lining has been riveted to the *brake shoe* by a mechanic with a "heavy foot".

Meshlock Wire Back Reinforcement puts *two* tough wires where only one is the accepted practice . . . it prevents "daylight" between lining and shoe.

From basic formula through each step in production, Grafild stands for brake lining manufacture that guarantees "Tops in Stops".

WORLD BESTOS CORP.

NEW CASTLE, INDIANA



Put these star salesmen to work for you!

The radiator of every automobile on the road is a potential salesman for you—if you sell Nor'way* Cooling System Service.

In Nor'way's national advertising campaign, the family car is speaking right up to the boss, telling him why Nor'way Spring Radiator Service is so important.

These potential customers will create demand for Nor'way Radiator Service and you should be ready to take care of them. Call your Nor'way jobber today.



NOR'WAY

* REG. U. S. PAT. OFF.

Specialties Division, COMMERCIAL SOLVENTS CORPORATION, 17 East 42nd Street, New York 17, N. Y.

SPEAKER



ELECTROMATIC VULCANIZER

★ *Fully Automatic*

★ METERED HEAT CONTROL

★ PREDETERMINED PRESSURE

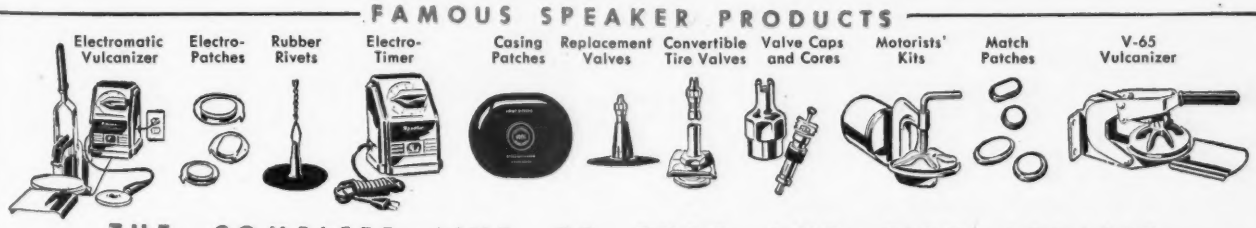
One word describes the new Electromatic ... SENSATIONAL! Yes, sir, you've never had anything like it! Tube repairs are a cinch now. You make them faster, easier, safer. Electromatic does the work for you. Merely set it... and forget it! Any tube injury or valve is dependably "welded" for keeps. Speaker Electro-Patches give you perfect, feather-edged repairs on either synthetic or natural rubber tubes every time. No failures. *And it's all done automatically!*

There's nothing like Electromatic for fast, low cost, convenient and safe tube repairing. Makes more sales, more profits, more satisfied customers for you. Change now to the advanced Speaker Electromatic Method. Order from your jobber.

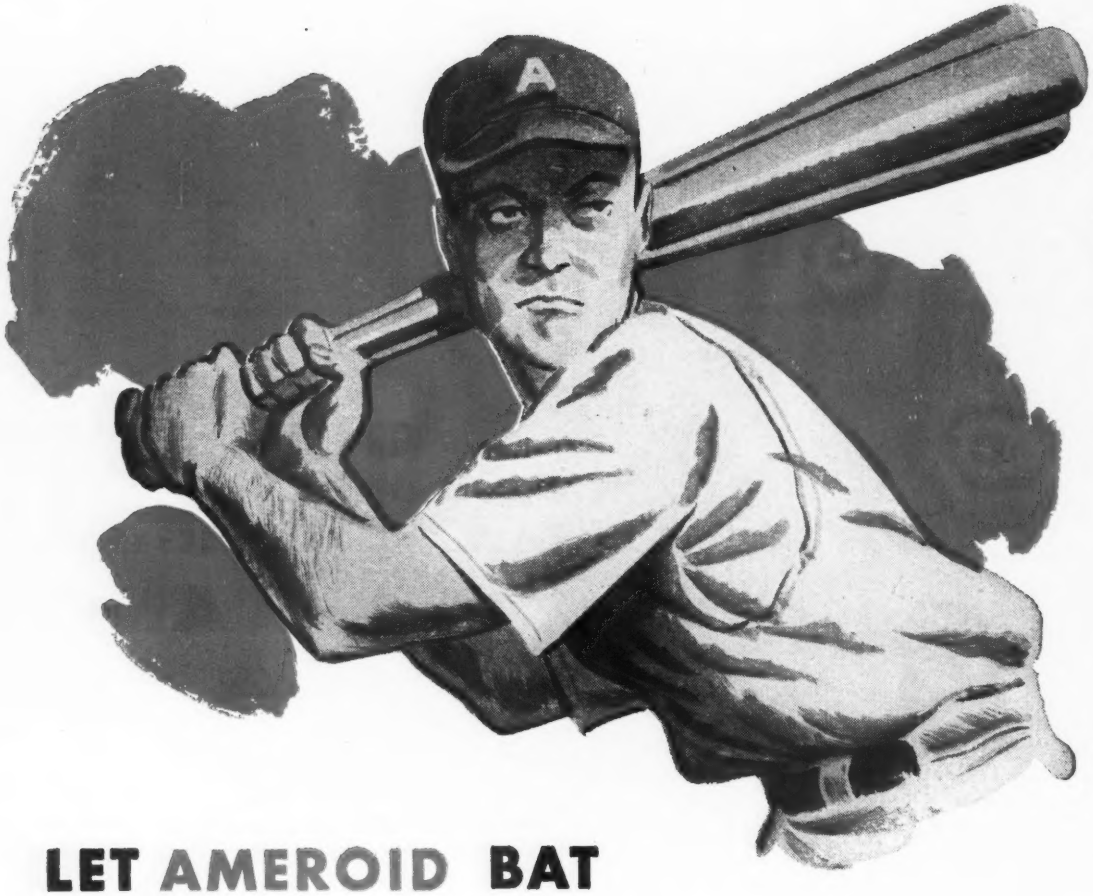


J. W. SPEAKER CORPORATION
Milwaukee 12, Wisconsin

FAMOUS SPEAKER PRODUCTS



THE COMPLETE LINE OF TUBE AND TIRE REPAIRS



LET AMEROID BAT "Clean up" FOR YOU!

Just as surely as the coming of Spring means the cry of "Play Ball!" throughout the land, it means "clean up time" to millions of car-owners, more cleaning jobs of every kind for you. With Ameroid going to bat for you, you're sure of making a hit every time.

AMEROID DUOFOAM

Super-quick car-wash. One gallon cleans 128 cars. Leaves bright, lustrous finish without rubbing. Makes chrome, glass, sparkle. Removes all dirt, grit, grease and color-dulling traffic film.

AMEROID DUOSOL

Deluxe grease and oil remover. For motor blocks, bodies, springs, chassis, axles; excellent for cleaning garage floors, cement drives. Mixed with from 4 to 6 parts kerosene.

AMEROID CARBURETOR AND PARTS CLEANER

Quickly, easily removes hard carbon, gum, varnish from carburetors, pistons, spark plugs, exhaust pipes, motor blocks and small engine parts. Can be used over and over again.

E. F. DREW & CO., INC.

Automotive Products Division

15 East 26th Street, New York 10, N. Y.

Other offices in Boston, Chicago, San Francisco, Los Angeles, Dallas, St. Louis

Newest Profit Maker

FOR
NEW CAR DEALERS
SERVICE STATIONS
AUTO ACCESSORY
STORES





POWER-PAK
TIRE INFLATOR
FIRE EXTINGUISHER

● Everybody's excited about Power-Pak. It's a quick-selling, profitable item to dealers. It's already a life-saver to hundreds of thousands of drivers.

The best testimonial to Power-Pak's high quality, good value and real usefulness is its acceptance by leading auto manufacturers as optional equipment on new cars.

Small, light weight and automatic, Power-Pak holds enough CO_2 (clean, safe and odorless) to fill three average size tires and quickly extinguish oil, gas and electrical fires in your car.

* Inquire about Power-Pak's full-scale advertising and merchandising plan.

$6.45
RETAIL
Complete
with
Tire Hose

Manufactured by
POWER-PAK PRODUCTS, INC.
BUFFALO 2, N. Y.

Sold through reputable automotive jobbers from coast-to-coast.

In Canada: Manufactured by Power-Pak Products, Toronto 2, Ontario.

FEL-PRO *Black Steel Copper!* HEAD GASKETS



Yours Is A *Complete Choice* When You "CALL FOR FEL-PRO"

As you know, some cars come equipped with Black Head Gaskets . . . some with Steel . . . and the most with Copper. Whichever type you want to use on a job . . . whether to match original equipment or because of your own preference . . . Fel-Pro has it. All are precision made—Tops in construction and performance dependability.

These Fel-Pro Head Gaskets—Black, Steel or Copper—are available individually, or better still as part of FULL Gasket Sets for all popular makes and models of cars and trucks. It pays to use Fel-Pro Full Gasket Sets! Not only do you do a complete and a better job that pleases customers but one that increases your profits. When you call for Fel-Pro Full Gasket Sets, you're in good company—for the builders of many of the finest engines and automotive equipment use Fel-Pro Gaskets, too!

2097



FEL-PRO *tect*

Full Gasket Sets, Packings, Grease Retainers

FELT PRODUCTS MFG. CO.

1521 Carroll Avenue • Chicago 7, Illinois

STOP Every "Drip" and Keep Him STOPPED . . . USE FEL-PRO!

BEFORE SANDING:

DU PONT PREP-SOL

cleans up FAST and EASY



STEP BY STEP—*How to get a perfect clean-up*

1. Wipe PREP-SOL on all areas to be painted, before sanding. Apply liberally.
2. After a few moments, but while still wet, wipe surface dry with a clean, dry cloth.
3. If old finish is in poor condition or is heavily waxed, a second application is recommended for best results.



Start your paint jobs off with Du Pont PREP-SOL—the solvent-type cleaner specially formulated for faster, easier surface preparation of over-all and touch-up jobs. PREP-SOL reduces sanding time; softens the old finish—quickly removes wax, polish, grease, tar, and traffic film.

Get uniformly finer results, *too.* PREP-SOL prevents foreign materials from being sanded into the old finish—assures a smooth, clean surface and excellent adhesion of the new finish. Speed up your work by placing a trial order for PREP-SOL with your Du Pont jobber today!

E. I. du Pont de Nemours & Co. (Inc.), Refinish Sales, Wilmington 98, Delaware

BETTER THINGS FOR BETTER LIVING DU PONT ...THROUGH CHEMISTRY

SAVES TIME
SAVES LABOR

PREP-SOL

extra! read all about it-



Read all about Monogram's *EXTRA* experience that makes new customers every day.

Read all about the *EXTRA* services Monogram dealers offer.

Read all about Monogram's national advertising.

Read all about it in the Saturday Evening Post.

NEW YORK LUBRICATING OIL CO.
116 Broad St., New York 4, N. Y.

Manufacturers of scientifically prepared lubricants for every purpose.

THE SATURDAY EVENING POST



MONOGRAM OIL

MANUFACTURED FROM PURE PENNSYLVANIA OIL WITH APPROVED ADDITIVE.

IMMEDIATE DELIVERY

Resistoflex Assortment that Services 85% of all Cars



Resistoflex Hose with Compar tube is totally unaffected by all known formulations of gasoline, lubricating oils, Diesel fuel, crankcase additives and grease.

Totally unaffected by flexing and vibration.

Withstands more tension and torsion than hose of any other construction.

Plastic non-removable sleeve with permanent catalog information.

Complete line of Brass Fittings—re-usable couplings.

Original equipment on vehicles, vessels, aircraft and oil filters.

RESISTOFLEX

Trade-Mark Reg. in U. S. & Can. Pat. Off.

Resistoflex Corporation
Belleville 9, New Jersey

PLANTS: Belleville, N. J.; Elkhart, Ind.; Toronto, Can.

Each hose assembly identified by catalog information on non-removable plastic sleeve.



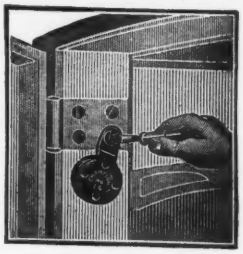
No. 945 Door Lock Spring Assortments for all popular Cars. Each spring painted a distinctive color —a glance at color chart tells you just the spring to use. Contains 28 different types of Door Lock and remote control springs with keepers.

THREE OF THE MANY

TIME SAVERS — RE-CONDITIONING CHAMP-ITEMS INC SHORT CUTS — MONEY MAKERS



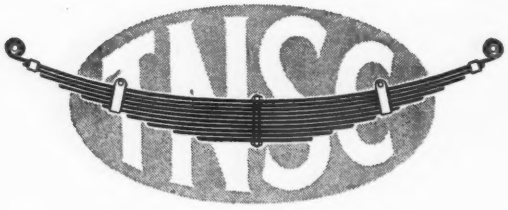
No. 404 Universal Speedometer Cable and Casing Assembly — A complete matched unit. Only 7 numbers to fit all cars. Each unit consists of cable and casing with all types and ferrules attached and assembled. Matches longest shaft in its group and leaves a little stock on shorter shafts.



No. 14 Door Anti-Rattlers. Millions in use. The most popular door silencer made. Easily installed. Be ready for big demand.

CHAMP-ITEMS, INC.
6191 MAPLE AVE., ST. LOUIS 14, MO.

ORDER FROM YOUR JOBBER



LEAF SPRINGS

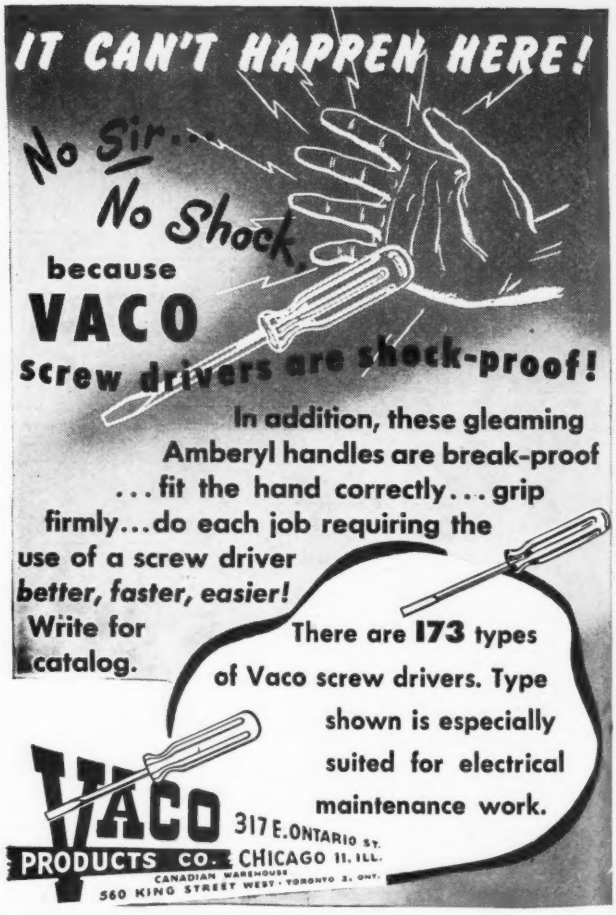
for

Passenger Cars, Trucks, Trailers and Busses

•

Write for information, literature and nearest distributor

TRAINOR NATIONAL SPRING CO., INC.
New Castle, Indiana





YOU'VE EARNED THIS BOOST IN SIMONIZ NATIONAL ADVERTISING

Yes, you've taken advantage of the record advertising placed behind SIMONIZ last year. You kept it the most widely used automotive finish maintenance product on the market. That's why SIMONIZ advertising has been increased this year . . . why pages and half pages in full color like this now appear regularly in more national magazines than ever. This continued support assures even more volume in '47. Offer SIMONIZ, the Simoniz Kleeners, and SIMONIZING to your customers today!

THE SIMONIZ COMPANY, CHICAGO 16, ILLINOIS



A profitable part of a complete spring tune-up

DELCO SUPER 9 BRAKE FLUID

DELCO BRAKE REPAIR KITS



Contain all essential replacement parts for master and wheel cylinders, conveniently packed in sealed, metal-topped containers. Dirt- and tamper-proof, they save time and trouble in handling, storing and inventory. All parts are right off the original-equipment production line!

Don't overlook brake systems when it comes to spring tune-ups. Clean out with Declene flushing fluid and refill with Delco Super 9. It means extra protection for your customers—extra profits for you!

Delco Super 9 safeguards brake performance and original-equipment parts all the way from 50° below to 300° above zero. It won't gum, foul or corrode brake pistons or cylinders, nor will it cause rubber parts to swell or rot. It's been proved safe, sure and efficient in millions of cars, trucks and buses!

DELCO BRAKE—A UNITED MOTORS LINE
Available Everywhere Through
UNITED MOTORS DISTRIBUTORS

UNITED SERVICE MOTORS

MORAINE PRODUCTS
DIVISION OF
GENERAL MOTORS

Delco
SUPER 9 BRAKE FLUID
DECLENE • BRAKE PARTS

STANDARD FOR EQUIPMENT • *THE* STANDARD FOR REPLACEMENT

WHY IT PAYS TO HANDLE G-E LAMPS

"FOR EVERY SOCKET—FOR EVERY CAR"

More and more dealers are discovering these common sense reasons why it's good business to make General Electric your basic line of automotive lamps:

1. **STEADY DEMAND**—There's a good market for G-E lamps the year 'round. Sooner or later, every customer needs 'em!
2. **FASTER TURNOVER**—More and more drivers prefer G-E lamps. They're easier to sell because the G-E monogram is a widely recognized mark of value.
3. **BETTER GROSS PROFIT**—Volume sales plus a good profit margin makes G-E lamps a top-notch money maker.
4. **COMPLETE LINE**—General Electric makes every type of automotive lamp—"for every socket, for every car."
5. **QUALITY LEADERSHIP**—You're sure of customer satisfaction, because General Electric research is constantly at work to make G-E lamps . . .

STAY BRIGHTER LONGER!



G-E LAMPS

GENERAL ELECTRIC

SIEBRING PORTABLE STEAM CLEANER

CUTS Cleaning Time In Half! SPEEDS All Repair Work!

For Cars, Trucks and Tractors
• Motors, Parts and Springs
• Before Painting
• Steam Washing

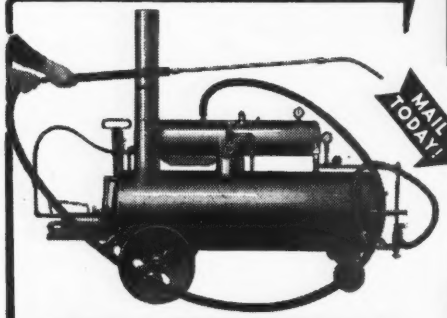
Here's a time-saving, job-speeding, money-making piece of equipment every garage, service station or repair shop should have. It provides instant steam, hot-water, or both, UNDER PRESSURE with powerful, cutting chemicals. Knocks grease and grime from motors, machinery or parts in a hurry. Service-free! Simple to operate! Safe and economical! Try it in your plant AT OUR RISK. Write for literature and 10 Day "Free Trial" Offer!

Amazing LOW COST PORTABLE UNIT

★ OPERATES economically! Burns low-cost fuel oil or gas! Electric units also available! ★ NOT dependent on city water pressure or electricity. ★ PORTABLE — Easily moved about. ★ Conforms to "Boiler Code" Recommendations in all states.

IMMEDIATE DELIVERY





SIEBRING MANUFACTURING CO.
503 MAIN STREET - GEORGE, IOWA

MAIL TODAY!

SIEBRING MFG. CO.
503 Main St., George, Iowa
SEND descriptive literature and 10 Day "Free Trial" Offer to
Firm Name_____
Address_____
City_____ State_____

MAIL THIS COUPON or WRITE for LITERATURE and TEN DAY TRIAL OFFER



BRAKE PARTS
BRAKE CABLES
BRAKE TOOLS
BRAKE FLUID

EIS literature is the most complete of its kind. And like Eis Products is recognized as "Standard" in the field of brake parts replacement.

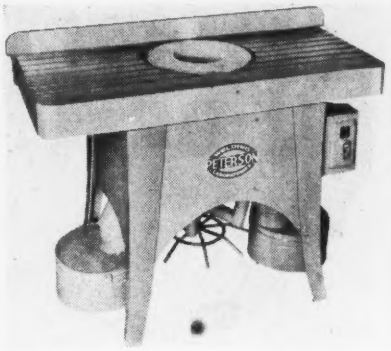
THE EIS AUTOMOTIVE CORP. — THE LINE OF DEPENDABLE SERVICE

From your jobber. Write us for full particulars.

THE EIS AUTOMOTIVE CORP.
MIDDLETOWN, CONN.

Peterson Surface Grinder

No set is necessary to grind cylinder heads and blocks to within .001 in., according to the manufacturer of the new Peterson Surface



Grinder. Heads and blocks are ground on this machine by guiding them back and forth across the grinding wheel.

Control is by means of a spider wheel which permits the operator to raise the stone a maximum of 2 in. to the grinding level, leaving both hands free to handle the work. A 16 in. suction fan, bolted to the under side of the grinding wheel pulls grinding dust down and deposits it in two dust collectors. This grinder comes in two models: 1A, equipped with 14 in. stone and 3 hp motor; and the 2A, equipped with 16 in. stone and 5 hp motor. Peterson Welding Laboratories, 1423 Virginia St., Kansas City, Mo.

Thor Valve Grinders

The Independent Pneumatic Tool Co., of 600 West Jackson Blvd., Chicago 6, Ill., manufacturers of Thor portable electric and pneumatic tools, announces a new Thor Valve Refacer and new Thor Valve Seat Grinder, complete with accessories, for all types of automotive valve and seat refinishing.

The refacer features a dual electric motor design and a "4 in 1" butt end grinding attachment which provides, as a unit, settings for four separate operations—grinding the rocker arm, the tappet, the stem, and dressing the wheel.

The seat grinder is a 5¾ lb. tool with an electric motor of increased power and a cushioned-design feature introduced to provide positive automatic precision with a minimum of operator control. All accessories are included.



Announcing a **NEW,** *improved*

AC GASOLINE STRAINER

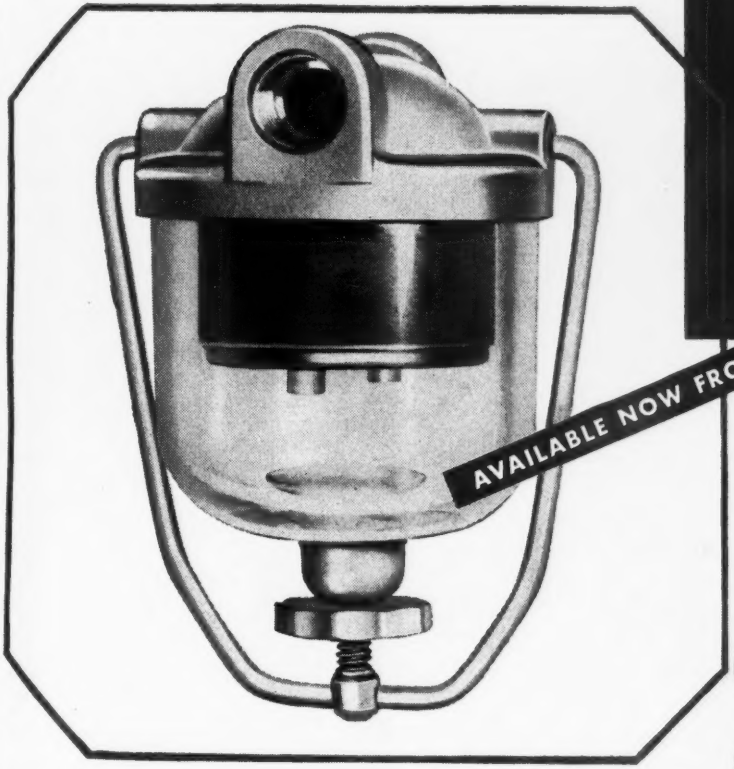
with new, high efficiency Replacement Element of patented "Fiberite" Disc Type

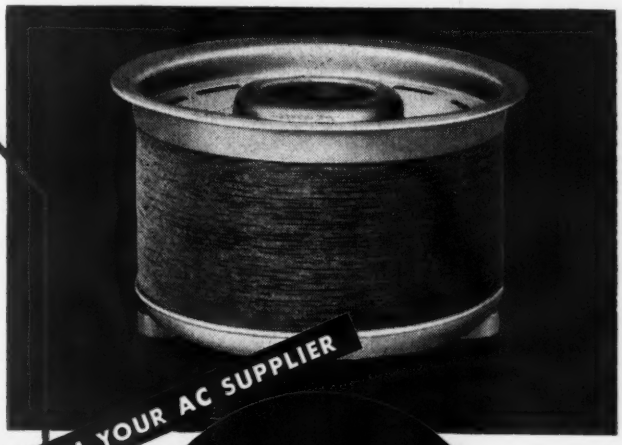
NOW, the AC Gasoline Strainer element used in U. S. combat and transport vehicles in World War II is available to you, for the first time. This high efficiency AC element is *100% non-abrasive,* water-proof, acid-proof, and rust-proof. It keeps lint, dust, dirt, abrasives, and water out of the carburetor. It affords full protection for jets, needle valves, and valve seats, and promotes peak carburetor performance. Straining area is *doubled* because gasoline enters the element from *inside and outside.* Each element is separately packaged. Replacement is easy, and takes only a few seconds.

7 COMPLETE GASOLINE STRAINER PACKAGES (containing all necessary fittings) COVER ALL PASSENGER CAR AND LIGHT TRUCK INSTALLATIONS.

1 ADDITIONAL STRAINER PACKAGE (containing all but *special* fittings) COVERS ALL *OTHER* ENGINE INSTALLATIONS.

Each time you install an AC Gasoline Strainer, you create a repeat customer for AC "Fiberite" elements. So, this newest AC product is *the* one for you to stock and install—for profit and volume, as well as for best customer satisfaction.





AVAILABLE NOW FROM YOUR AC SUPPLIER

AC GASOLINE STRAINERS

AC SPARK PLUG DIVISION • GENERAL MOTORS CORPORATION



For Fast Servicing

HALLOWELL

"AUTO KIT"

with interchangeable parts



Clutch Head bits, Flat bits, Phillips bits, a Tapered Reamer . . . all in the handle of this compact, self-contained Kit! They are a carefully contained assortment of tools . . . universally adaptable . . . to help simplify the task of auto repairing and maintenance. Insert the tool you want in the locking swivel bit-chuck . . . and it is ready for use.

The Hallowell "Auto" Kit is as rugged as any all-metal tool; handle is of durable plastic; tools of high-grade alloy steel.

Available at Dealers throughout the country. If your Dealer does not carry this Kit, or is sold out, send his name to us, along with yours, and you will be taken care of promptly.

An ideal gift or prize.

Kits: Pat's Pend.

Over 44 Years in Business

STANDARD PRESSED STEEL CO.

JENKINTOWN, PENNA., BOX 561

Boston • Chicago • Detroit • Indianapolis
St. Louis • San Francisco

Collyer Advocates "Make Haste Slowly"

Stressing his Company's view that "National Security in rubber should be built on the foundation of competitive enterprise," John L. Collyer, president of The B. F. Goodrich Company appeared recently before the Sub-Committee on Rubber of the Senate Banking and Currency Committee.

"We firmly believe," Collyer said, "that the best and lowest cost national security program would be one built on competitive enterprise, because the free play of economic forces will do more than anything else to spur research, development and production within the United States of all types of rubber, and of more and better rubber products at lower costs, thereby providing manufacturing facilities and skills in this country invaluable in a time of national emergency."

He outlined a program which, in addition to stockpiling of crude rubber by legislation already enacted, recommended that the government's present economical facilities for manufacture of American rubbers should be maintained in stand-by condition, ready to be run on short notice and that sufficient tonnage of such rubbers for the maintenance of national security should be made and used in this country each year.

Classified Advertisement

FOR SALE. Established motor parts. Inventory. With or without building. Perpetual business. Service in connection. MENDENHALL, Fort Myers, Florida.

SALES REPRESENTATIVES — Brake lining manufacturer has three territories open for aggressive salesmen on salary, expense, and attractive bonus basis. One territory is Chicago, part of Illinois, and Indiana. Another territory covers Ohio, and Michigan. The other covers western Pennsylvania and West Virginia. All replies kept strictly confidential. Write to—L. G. Kersgard, Replacement Sales Mgr., World Bestos Corp., New Castle, Indiana.

AGENT—SELL TRU-KUT AIR DRIVEN VALVE GRINDERS. On market 27 years. Excellent opportunity. Santa Monica Crafts, 4754 W. 131st St., Hawthorne, Cal.



U.S. Pat. No. 2,093,547 — Canadian Pat. No. 223,568

INTERNATIONAL CHAIN & MFG. COMPANY

YORK, PENNSYLVANIA

DEVILBISS

Spray-Painting Equipment— Spray Booths — Exhaust Fans — Air Compressors — Hose and Hose Connections — Oil Guns.

See your authorized DeVilbiss distributor

THE DEVILBISS COMPANY

Toledo 1, Ohio

NEED HOSE CLAMPS?

Write today for FREE sample of the new Central 360° Wire Hose Clamp . . . and Bulletin No. 4347.

CENTRAL EQUIPMENT CO.

902 S. Wabash Ave., Chicago 5, Ill.



VAN EXCHANGES

Since 1919

- STARTER DRIVES
- DISTRIBUTORS
- SHOCK ABSORBERS
- FUEL PUMPS
- UNIVERSAL JOINTS
- CURRENT REGULATORS
- WIPER MOTORS

Car Dealers: We will buy your old parts. Write for price list.

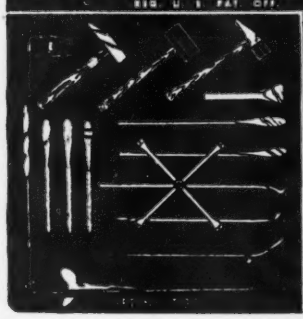
VAN BERGEN & GREENER, INC.

1619 N. Hoyne Ave., Chicago 47, Ill.

356 Venable N.W. ATLANTA | 2727 Oak St. KANSAS CITY | 2306 N. 15th St. PHILADELPHIA

KEN TIRE TOOLS

REG. U. S. PAT. OFF.



LEAD THE FIELD • ADVANCED DESIGN • QUALITY UNSURPASSED • SEE YOUR LOCAL JOBBER OR WRITE FOR LITERATURE •

KEN TOOL MFG. CO.

AKRON 5, O.

for EXTRA profits . .

"GET THE WHEELS OFF!"

John BEAN

CENTERPOINT BALANCERS-57J WHEEL SPINNERS

. . . a team that will earn you EXTRA profits two ways:

1. Demonstrate the need for balancing quickly and easily with a Bean Wheel Spinner. Remove wheel, balance exactly, and replace it---all in fifteen minutes. No time lost by "trial and error" fumbling with inaccurate readings . . . . time saved means extra profits.

2. While the wheels are off, brake linings, bearings, and grease packing can be checked to give complete service . . . service that makes extra profits.

For details on EXTRA balancing profits, ask your Jobber about John Bean Balancers and Wheel Spinners.

JOHN BEAN MFG. CO.

DIVISION OF FOOD MACHINERY CORPORATION

LANSING 4, MICHIGAN



WHEEL ALIGNERS AND CORRECTION TOOLS...WHEEL BALANCERS AND BALANCING TOOLS...WEIGHTS...STEAM CLEANERS...CAR WASHERS

CESCO *Puddler Kit*



FOR ALL GAS
Welding Torches

SOLDERING
TINNING
HEATING

$2.75 WITH 2 TIPS

Just slip a Puddler on the tip of any gas welding torch and it's converted for use with acetylene alone. Affords ideal flame for low heat jobs such as tinning, body soldering, silver soldering, and heating. No gas torch is complete without a Cesco Puddler Kit. Furnished with two tip sizes for wide range of heat output. Get your Puddler Kit today!

Sold Thru Your Jobber Write for Bulletin No. 12

CESCO PRODUCTS, Inc.
Dept. M, 30 N. La Salle Street
Chicago 2, Ill.

HYDRAULIC BRAKE CYLINDER
CLEANER AND POLISHER



Pat. No. 2348132

Muck and scale quickly removed and brake cylinder polished to a mirror finish in a few seconds. Eliminates wasteful outside trips Does the entire job in your own shop.
$3.25 FROM YOUR JOBBER

THE HYLAND MANUFACTURING COMPANY
818 John Street Portsmouth, Ohio

THE COMPLETE LINE
that
Completely Satisfies
Since 1906
The
Fitzgerald Mfg. Co.
Torrington, Connecticut



Fitzgerald
GASKETS

for SAFETY
REFLECTORS • LAMPS • FLARES

GROTE

GROTE Manufacturing Company, Inc. Bellevue, Ky.
Automotive Sales Office: Moorestown, N. J.

KEEP OIL FREE FROM ABRASIVES



PUROLATOR PRODUCTS, INC.
Newark 2, N. J.
Founder and leader of the oil filter industry

AMA Holds Meeting

The Automotive Maintenance Association of Philadelphia recently celebrated its 25th anniversary with a banquet meeting. The meeting featured entertainment and the principal speech was on fire prevention.

All past presidents and charter members of the organization were special guests. The president for the current term is R. H. Erny.

Thompson Products, Inc., Appoints Two Executives

Philip Sommerlad, formerly secretary and treasurer of Motor Parts & Supply Co., Jacksonville, Florida, has been appointed general sales manager of the service division of Thompson Products, Inc., Cleveland, Edwin T. Syvertsen, service division general manager, announced recently.

Sommerlad was eastern sales manager of the Thompson service division in 1937 when he left the company to enter the auto parts distributing business in Florida. He fills a position left vacant when Syvertsen was made general manager last year.

R. G. Riley has been promoted from service division development engineer to merchandising director of the same division. Riley has been with Thompson Products in various capacities since 1935. He is a member of the Society of Automotive Engineers and the author of many technical articles. A fluent speaker, he has addressed hundreds of automotive audiences. Riley is regarded as a national authority on jobber machine shop and store layouts. He has drawn over 200 shop and store plans for the company's parts jobbers.

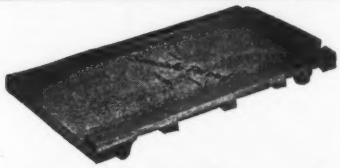


. . . For Faster and More Accurate BATTERY TESTING

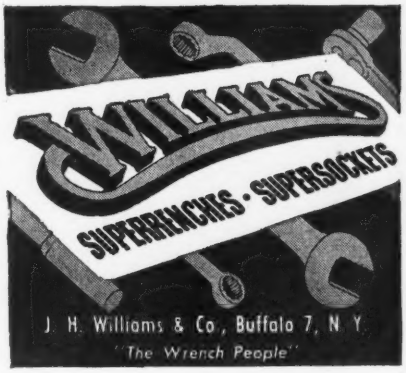
IMPERIAL "K"
No. 515-T
BATTERY HYDROMETER
★ Thermometer Type
★ Shatterproof Glass Jar

ORDER FROM YOUR JOBBER

THE IMPERIAL BRASS MFG. CO.
1217 W. Harrison St. Chicago 7, Ill.



Smash-Proof
CREEPERS
Sold by all leading jobbers
HULBERT MANUFACTURING CO.
Ashtabula, O.



J. H. Williams & Co., Buffalo 7, N. Y.
"The Wrench People"

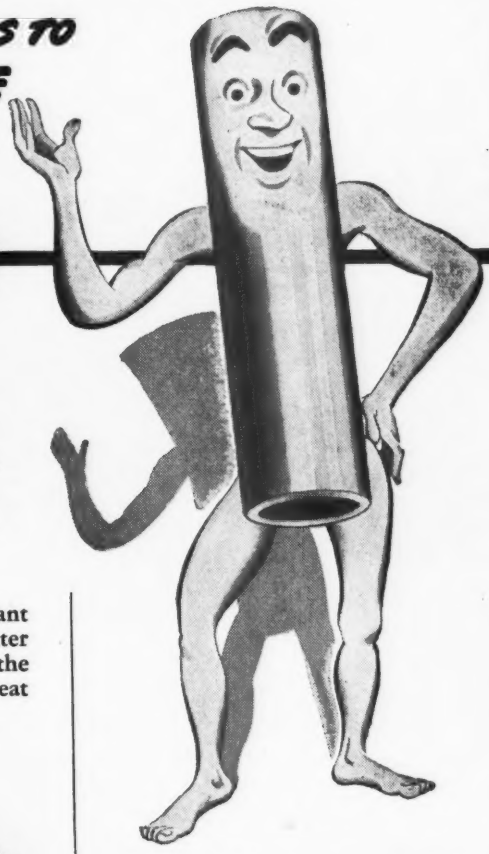
Ask about the
FOX
RAPID
BATTERY CHARGER
FOX PRODUCTS COMPANY
PHILADELPHIA 41, PA.

WORLD WIDE
Genuine WELLS Ignition
USE PROVED IGNITION PARTS
QUALITY TELLS
DEMAND WELLS
WELLS MFG. CORPORATION
FOND DU LAC, WIS.

The Story of a Genuine Ford Piston Pin

OR WHY IT PAYS TO USE GENUINE FORD PARTS

GENUINE Ford PARTS

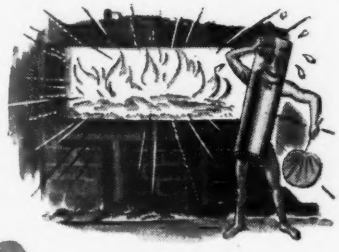




1 I arrived at Ford's Rouge Plant as iron ore aboard a freighter . . . and was hustled through the roaring blast furnace to the great Ford steel mills . . .



2 There I was made into a very special kind of steel—one of dozens of kinds of steel that go into Genuine Ford Parts.

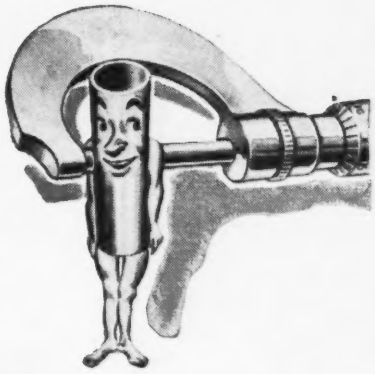


3 I was pretty hot stuff at this point, when they cast me into a rough pin. So they let me cool off gradually and evenly.

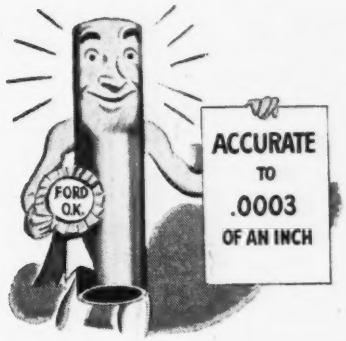
But not for long, 'cause I was popped back in the furnace for another roasting and was case hardened. I was a real tough guy!



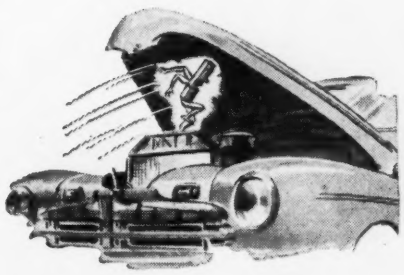
4 Up till this time I guess I was a pretty rough looking character, but you should have seen me after I was machined and polished . . . bright and shining as a new nickel!



5 I was feeling like a pretty doggoned fine pin . . . but those Ford engineers are never satisfied. Boy, they gave me a series of tests that was really the works!

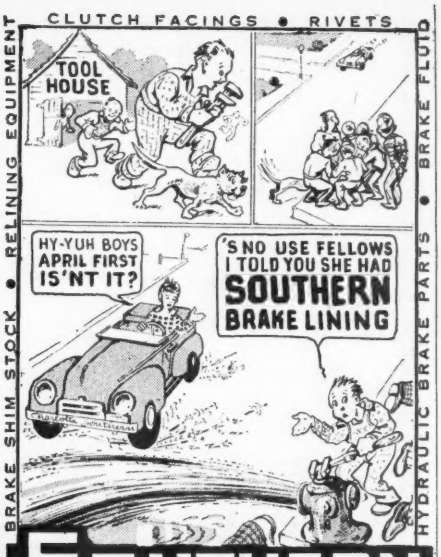


6 I passed 'em all in good order. And was I proud of that Ford OK . . . 'cause you know not every pin is within .0003 of an inch of absolute accuracy . . . which I am!



7 Then I was branded a Genuine Ford Part and was soon on my way to a Ford Dealer. And a couple of days later I hopped into a Ford engine, where I felt completely at home. For you see I was made right, so naturally I fit right and will last longer.

FORD MOTOR COMPANY

CLUTCH FACINGS • RIVETS
BRAKE SHIM STOCK • RELINING EQUIPMENT
HYDRAULIC BRAKE PARTS • BRAKE FLUID


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Measurably Better
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FOR ALL CARS AND TRUCKS
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SPINNING POWER
-a Companion Product of Full-Spark Plugs
GLOBE-UNION INC.
MILWAUKEE 1, WIS.


Pontiac Develops Kit for Low Cost Reconditioning

Pontiac dealers have been offered a reconditioning kit to aid them in smoothing up old cars at low cost.

Today's used cars have had particularly long hard wear and the interior is usually not too attractive to the prospective buyer. The reconditioning kit offers a way for the average dealer without the help of specialist or expensive processes to clean up his cars.

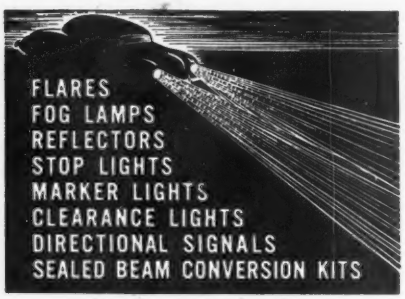
For worn floor coverings the kit contains patching material, cement, and brown, black or taupe plastic dye. For cracked steering wheels, there is steering wheel putty and paint. For instrument panels and door and window mouldings, the kit contains a quick graining material and Quick Gloss.

Upholstery cleaner freshens up the headline and removes spots from the seats, and all purpose adhesive patching fabric covers holes. The headlining can be sprayed with an adhesive and with a fine fuzzy textile, called Flock. Flock is also sprayed on in larger quantities to renew the interior of the trunk compartment. If the upholstery is faded, a special tint liquid in blue or taupe restores the color.

Exterior chrome is renewed by what Pontiac calls the Bak-O-Chrome process. The chrome is first cleaned thoroughly with chrome cleaner and all rust removed from pitted areas. Next a thick liquid is painted over the part and allowed to dry for 10 minutes. Chromium powder is then applied with a wool puff and the application of heat from a torch fuses the powder and the liquid.

The kit contains enough material to refinish 10 used cars at an average cost of $6 each.

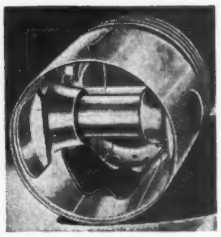
When the Motor is Down Build it Up with...
Allied MOTOR PARTS
NAPA Assurance of Quality
ALLIED MOTOR PARTS CO.
DETROIT 1, MICHIGAN



ARROW SAFETY DEVICE CO.
MOUNT HOLLY, N. J.

THE UNITED STATES ELECTRICAL TOOL CO.
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MASTER RECAMS are individually designed for all late model cars; easily installed without removing pistons. The profitable way to Stop Piston Slap, Oil Pumping and Motor Noise.
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MOTOR OIL AND LUBES
100% PURE PENNSYLVANIA
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THE ANDREWS LINE...
Your Best Electrical Connection
CUSTOMER SATISFACTION SINCE 1921
Andrews
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ST. LOUIS, MO.

AC REBUILT FUEL PUMPS ARE REBUILT —NOT REPAIRED



There's a world of difference between merely repairing a fuel pump, and rebuilding a fuel pump by the production-line methods used by United Motors Service.

AC fuel pumps accumulated for rel uilding are completely torn down and disassembled. Every part is carefully inspected, and all worn parts are discarded. And in *every* case, regardless of its condition, the diaphragm—the heart of the fuel pump—is replaced with a brand-new AC original-equipment diaphragm.

The assembly of the pumps is done on a production-line basis, each pump being inspected many times in the process, to meet final specifications established by AC factory engineers.

Every AC fuel pump rebuilt by United Motors Service carries a new pump guarantee.

AC rebuilt fuel pumps are sold in all trading areas on an exchange basis by United Motors Service distributors.

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UNITED MOTORS SERVICE
DIVISION OF GENERAL MOTORS CORPORATION
GENERAL MOTORS BUILDING, DETROIT 2, MICHIGAN

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Every car needs CORDS

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You'll stick to
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BINGO SOLDER KIT



Just slip a Bingo Solder Tip assembly, using the Bingo No. 2 tip, over the tip of your welding torch and you're ready to do a fast job of body soldering. Use of the No. 1 tip quickly converts the Kit for light soldering.

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Your NAPA Jobber is a Good Man to Know!
NAPA
Assurance of Quality
NAPA
Is the Largest
Independent Organization
In the Parts Industry

William C. Durant

(*Continued from page* 76)

Durant made cars appealed to people spending as little as $319 and as much as $11,000. Ninety days after the first model was displayed, Durant announced that orders had been received for $31,000,000 of cars.

With the new company firmly established, Durant once more went after control of General Motors and got it. By 1925 he was again in the chair which he loved so well. The crash of 1929 slid Durant once more out of power, and his personal connection with the automobile industry was ended.

His genius for speculation was matched by a genius for organizing business on a gigantic scale. Although he was fundamentally a promoter and speculator, he was one of the great figures responsible for the rapid rise of the automobile industry. It was he more than any other man who brought to the struggling industry the power of capital.

He did more than reap paper profits, however. He erected efficient factories, he produced good products, and he gave jobs to hundreds of thousands of men.

New Goodrich Plant

The new $11,000,000 Tuscaloosa, Ala., plant of The B. F. Goodrich Company is "successfully approaching its capacity production of 6000 tires and tubes daily," announced T. G. Graham, vice-president.

Reported to be the most modern in the industry, the Tuscaloosa plant was completed late in 1946. He said this plant's output would be "a major contribution toward bringing tire supply into balance with tire demand.



They Can't Drive Without TIRES!

New Tires are still hard-to-get! Keep your customers' cars running with KEX Tire Plugs —They are the quickest, permanent method for sealing punctured casings at lowest cost. Wholesalers sell KEX.

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Triple Seal Moisture-Proof
CONDENSERS



Ask your Shurhit jobber or write us for details on these superquality replacement parts. Complete Shurhit line includes Condensers, Contact Points, Rotors, Caps, Coils, Brushes, Cut-Outs, Switches, and Spark Plugs.

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You Can Rely On
FRENCHTOWN INSULATORS
Used by more spark plug manufacturers than any other.
FRENCHTOWN PORCELAIN CO.
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(Factory: Frenchtown, N. J.)

How Are Your Prospects For Making $10,000-$12,000 During 1947?

If not, and if you can qualify by being completely familiar with the workings of an internal combustion engine and have had sufficient business experience to organize and supervise a sales organization, it will be to your interest to write Castor Oil Products, Inc., Yonkers 2, New York, regarding exclusive Philadelphia territory for marketing new automotive products made from distilled essence of degummed castor oil being marketed in 18 states.

Cal-Van
GARAGE TOOLS



* WRITE FOR CATALOG

Cal-Van
MACHINE PRODUCTS
JACKSON, MICHIGAN, U.S.A.

"De-Sludge Every Car Before It Is Torn Down!"

This is the blanket order issued by a mid-west Nash dealer for every car brought into the shop for a major overhaul, after their experience of the last six months with Magnus #755.

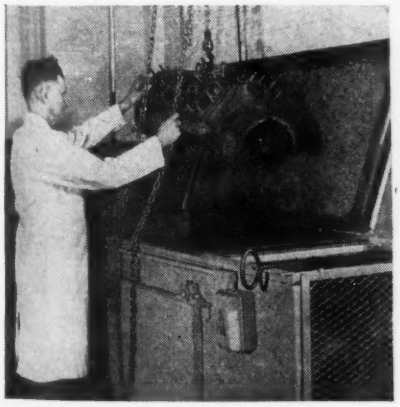
Their records show that de-sludging with Magnus #755 saves them at least 20% in labor, and eliminates about 50% of their wiping rags.

They charge their customers only $6.00 for de-sludging with Magnus #755, figuring a net profit of $3.00. They explain to their customers that this internal cleaning job is for their protection.

This shop feels that a $3.00 profit per job is ample, although they could get the regular charge of $12.00, because of the good-will Magnus #755 insures. They put it this way: "We know that when we've overhauled a de-sludged car we turn a job over to the customer that won't be back in a few weeks with burned out bearings, stuck valves or scored cylinders."

Four Hours' Work in One Hour

This #3 Magnus Aja-Dip Cleaning Machine cleans in one hour engine blocks and parts that used to take four hours when soaked in a tank and hand brushed. Parts are



much cleaner, and hand work is virtually eliminated. Overall cleaning costs are less than 25% of what they used to be.

Magnus Aja-Dip Cleaning Machines are made in 10 sizes, for loads varying from 10 lbs. to 2,200 lbs.! There's a size for every shop cleaning problem.

NEW CLEANING IDEAS

For Further Details Write Magnus

Economical Body Cleaner is Magnus NXL—a unique wetting agent. One gallon mixed with fifty gallons of water make a very economical cleaning solution. Wet down with water, sponge on NXL, then rinse with water which sheets off to leave a clean surface requiring next to no chamoising. No. 17

●

Keeping Rest Rooms Clean and Sweet is easy with Magnus 55-P. A cleaning solution made up from one-half cupful of this unusual cleaner to a pail of water will easily remove all finger prints, foot marks and writing on the walls and floors. Deodorizes and disinfects as it cleans, too! You won't have to repaint so often, either. No. 18

●

Want Clean Floors at Low Cost? There's no faster, surer method of keeping your concrete floors really clean than with Magnus Cement Cleaner. Whitens and hardens as it cleans—and will handle long-neglected greasy deposits. No. 19

●

Stop Sludge from Forming with Magnus Metaffin. On a new engine, or on any car that has been de-sludged with Magnus No. 755, you can prevent accumulation of dangerous sludge deposits by adding Magnus Metaffin to the lube oil with every oil change at the rate of one pint per gallon of oil. No. 20

●

Safe—Sure—Fast Hand Cleaning in the garage is what you'll get with Magnus Hand Cleaner. No harsh, gritty scouring agent. No caustic, harmful chemicals. Leaves hands soft and thoroughly clean without robbing skin of natural oils, hence no chapping or cracking. No. 21

Curb Service in Radiator Cleaning

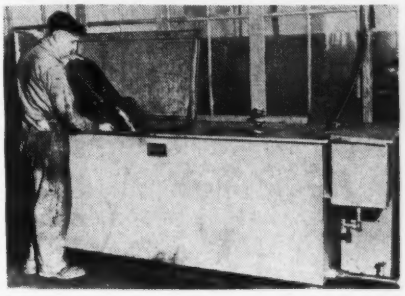
Now is the season when you can cash in on the quick, sure, economical cleaning job you can do with Magnus D-Scale-R. This inhibited acid cleaner removes all rust, scale and other deposits from car radiators without any danger of damage to the system.

Remember that soda or other alkaline cleaners are only good for greasy dirt. It takes acid action to remove radiator deposits!

The Ideal Cleaning Tank for the Small Shop

The Magnus Kol-Dip Cleaning Tank is saving a small shop over 30% in time and handling dirty, greasy automotive parts. They are cleaning an average of 150 parts a day, with 7 mechanics using the tank for their work.

Kol-Dip combines 3 cleaning operations in one compact unit, and



removes all dirt, grease and oil (including carbonized deposits) without need for heat.

Here's the Book That Saves You Plenty in Cleaning Time and Costs!

The Magnus Automotive Cleaning Handbook has been a standby in the automotive industry for many years.

The latest edition covers every cleaning job you have to do, giving the reasons why certain cleaning materials and methods are required, and providing step-by-step instructions to help you make sure you do the best cleaning job in the least time, and at the lowest cost to you.

If your edition is a year or so old—or if you've never had a copy—be sure to write for the new edition. It'll pay you real dividends!



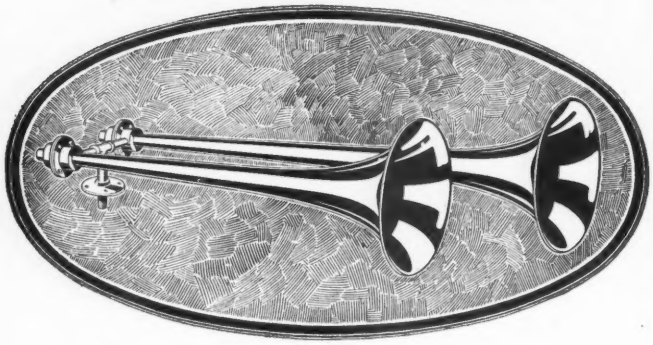
Magnus Automotive Cleaners & Machines

MAGNUS CHEMICAL COMPANY · 174 SOUTH AVE., GARWOOD, N. J.

Service Representatives in Principal Cities

IN CANADA — MAGNUS CHEMICALS, LTD., 4040 RUE MASSON, MONTREAL 36, QUE.

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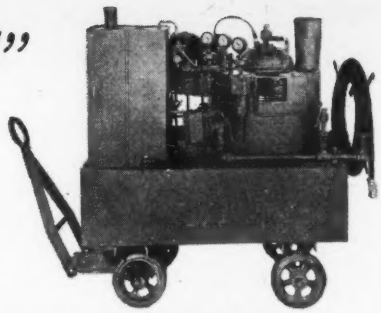


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"Packaged" Steam



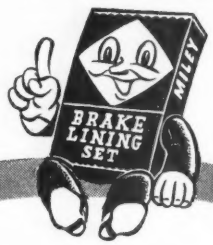
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Brake Lining—Stops Cars faster by actual Police Test.

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Jobbers and Dealers write

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Dept. E, 1111 N. Clark St. • Chicago 10, Illinois



DEPENDABILITY built their reputation

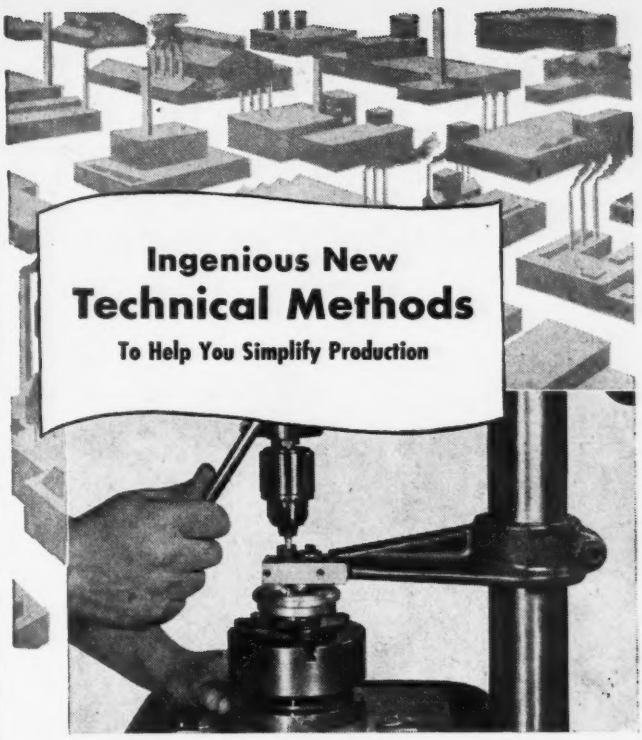
Master BRAND

REPLACEMENT PARTS PREFERRED BY REPAIRMEN who know from experience



A DEPENDABLE MANUFACTURING SOURCE OF SUPPLY

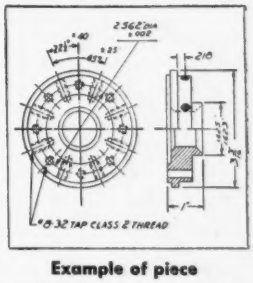
CHEFFORD MASTER MFG. CO., INC.
(DEP'T B.)
FAIRFIELD, ILLINOIS



Precision Adapter for Drill Presses Perfects Alignment—Prevents Drift!

The new Aetna Adapter, of aluminum alloy, fits the columns of most small drill presses—assures accurate milling and deep hole drilling—without a drill jig. It firmly and accurately holds interchangeable drill bushings close to work.

Precision alignment is accomplished through an eccentric aligning bushing, which once set needs no further adjustment. Filler bushings cover the entire bushing range up to ½". Stops to locate the piece to be drilled, are attached to the press table or directly to the adapter. Milling chatter is avoided. Chip interference is eliminated. Overlapping holes can be drilled without punch marks, or indication of run-out, with drills as small as 1/32" diameter. ¼" holes can be drilled more than 6" deep with as little as .006" drift.



Example of piece drilled with Aetna Adapter

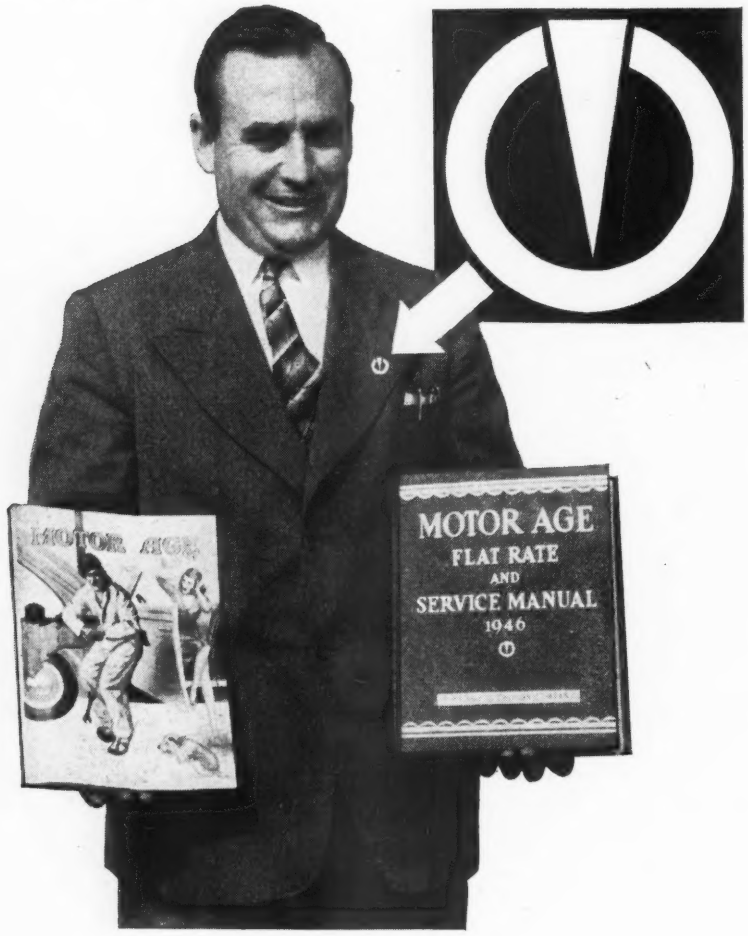
Accuracy in work is achieved best by alert workers. That's why many plant owners make chewing gum available to all. The chewing action helps relieve monotony—helps keep workers alert, aiding them to do a better job with more ease and safety. And they can chew Wrigley's Spearmint Gum right on the job—even when hands are busy.



You can get complete information from Aetna Mfg. Co., 250 Chicago Ave., Oak Park, Ill.

AB-60

Here's How to Tell at a Glance



if a salesman represents MOTOR AGE

LOOK FOR THE MOTOR AGE SYMBOL *in his buttonhole*

We don't mind it if you buy another publication service if it is the service of your choice, but too many times our subscribers have bought without making certain they were purchasing Motor Age and Chilton Service. That's unfortunate and regrettable.

To make it easy for you to be sure next time, we have asked Motor Age Chilton Men to wear the Company's familiar trademark on their coat lapels.

You know the well-known wedge that splits a circle—that's the Motor Age-Chilton symbol.

Look for it whenever a publication or manual salesman walks into your place. If you see the symbol, he's your man.

You'll find his name in the list of our representatives listed below:

Territory	Salesman	Territory	Salesman
Ohio	A. C. Bendall	Southern California, Arizona	Ed Koschnick
Eastern Penna., Delaware, Maryland	J. Briskman	Metropolitan New York City	David Aaronson
West Virginia, Ohio	G. M. Clark	Northern Texas, Oklahoma	Paul W. Lively
Western Pennsylvania	Fred Cloud	Western New England	P. H. Lyman
Washington, Oregon, Idaho	E. E. Davis	New Jersey, Eastern New York State	F. A. Moran
Missouri, Kansas	H. C. Eckert	Eastern New England	C. J. Mullin
Michigan	Earl Flaharty	Wisconsin	H. H. Nixon
Central California, Nevada, Utah	Noble Hickey	Southern Texas, New Mexico	F. Sauser
Illinois	Ed Hill	Western New York State	D. N. Schwarz
Iowa, South Dakota, Eastern Nebraska	R. M. Hoover	Northern California	H. G. Spiller
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H & H FAST BATTERY CHARGER



Model SN

$99.50

F.O.B.
Los Angeles

Survey Proves 10,000 Users Can't Be Wrong!

Results of the recent H & H User Survey show:

Users say H & H does a good job.....100%
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H & H Fast Charger uses the motor-generator principle, the most practical and economical method of battery charging. H & H Model SN charges 6-8-12 volt batteries in 35-45 minutes. Proven under all conditions since 1936 by over 10,000 users!

- **Lightweight**
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- **Guaranteed Can't Harm Batteries**
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See your dealer or write Dept. M-2

PLASTIFORM MFG. CO., INC.
306 Boyd Street, Los Angeles 13, California

New Universal Engine Overhaul Stand



CHEVROLET ENGINE MOUNTED ON CLAYBORNE MODEL 201 STAND

The Clayborne Universal No. 201 Stand handles all in-line automotive engines to 600 lbs. Accommodates complete engine, including accessories. Perform every operation without removing block from stand.

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It's Good SERVICE...

to Suggest a

DOLE

REPLACEMENT

THERMOSTAT

AS PART OF EVERY MOTOR TUNE-UP



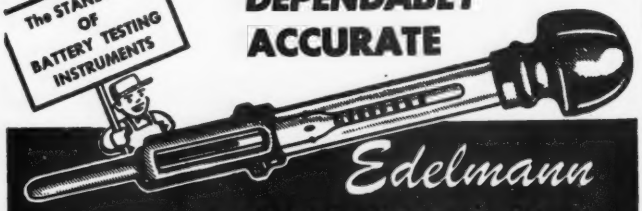
You do your customer a favor—*at a profit to yourself*—every time you sell the idea that thermostat replacement contributes to improved performance. It means important savings in gas, oil and motor wear.

Only a Dole Thermostat can be set for variations in seasonal conditions and types of anti-freeze. Replacement is simple. Remember, every car needs a new thermostat at regular intervals for top performance.

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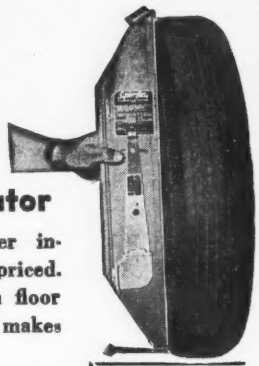
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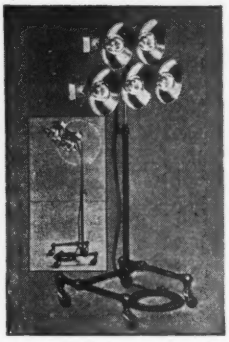
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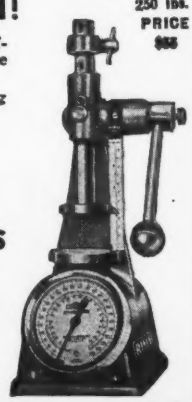
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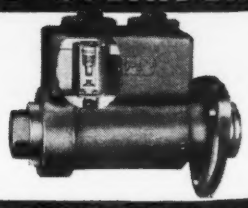
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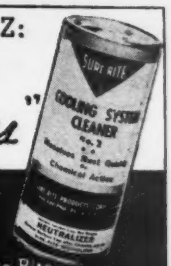


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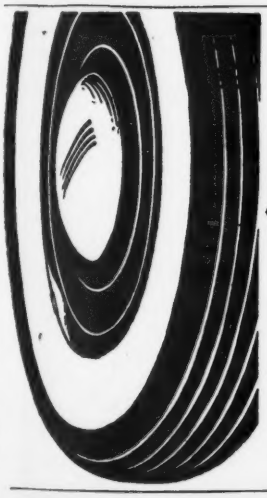
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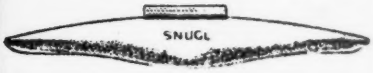
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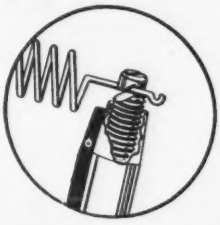
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Colorful *Vitrolite** glass facing accentuates the beauty of this front, framing the display in striking colors that keep their luster. Being glass, *Vitrolite* doesn't need painting or refinishing. An entire Visual Front cleans quickly and easily with a hose and squeegee.

Have you hired your visual salesman?

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During the day, natural light streams in to make the showroom cheerful and inviting. And at night, the expanse of clear plate glass presents a brilliant exhibit to passing traffic. To further emphasize the open effect of a storefront, use doors of L·O·F *Tuf-flex** tempered plate glass. They add a look of modern smartness, and are now readily available.

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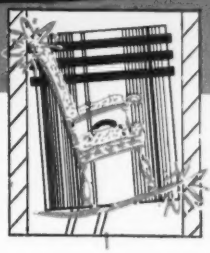


On the **UPSTROKE,** as the taper widens, Spiro-Seal **UNWINDS**

On the **DOWNSTROKE,** as the taper narrows, Spiro-Seal **WINDS UP**

HOWEVER: Friction between the leaves RETARDS the **UNWINDING ACTION** on the upstroke, causing lower wall pressure for better lubrication.

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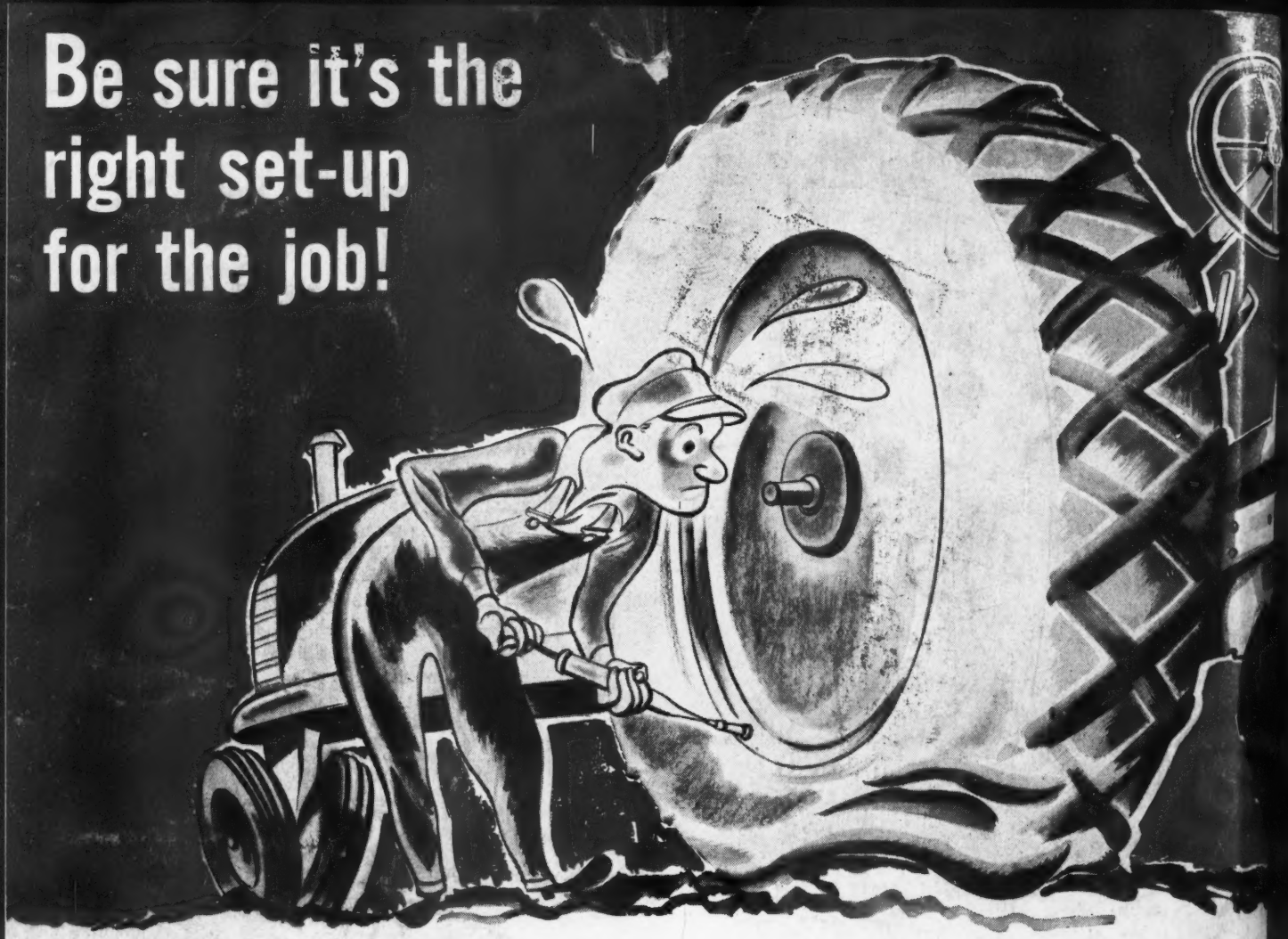
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